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ABSTRACT

A study measured the effects that direct instruction in narrative text structure using a story map (called "macrostruction") had on the comprehension of average and above average sixth-grade readers. A 2 x 2 x 2 repeated measures design was used with time, text, and treatment as the independent variables. The number of story grammar idea units recalled served as the dependent variable for free- and prompted-recall, with a 4-point rating scale used to categorize the type and frequency of responses given to short answer interpretive and applicative questions. Twenty-one subjects received a 4-week treatment in identifying and using the underlying structure of a text for improving reading comprehension, while a control group continued with routine classroom instruction. Contrary to similar studies conducted, the instructional treatment did have a significant effect upon the number of idea units recalled and the type of comprehension of better readers. Hypotheses concerning the amount and type of comprehension affected were supported. Possible explanation for these results are discussed and implications for teachers and researchers stated. (Author)

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MACROSTURCTURE PROCESSING: HOW DIRECT STORY GRAMMAR INSTRUCTION AFFECTS COMPREHENSION

by

Douglas Keith Hartman

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A thesis

submitted in partial

fulfillment of the requirements for the degree of

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Chapter 1

INTRODUCTION

Statement of the Problem

In the last decade, much effort has gone into observing and identifying the text characteristics of stories that are well remembered and the assumptions, expectations, and schemata that individuals bring to the story text. Despite the presence of this growing body of research, little research has been conducted regarding the effects of directly teaching children to identify the macrostructure of stories they read and remember. In addition, little is known regarding the transferability of such direct instruction in narrative text structure. This study has been designed to measure the effects that direct instruction of narrative text structure has on literal, interpretive, and applicative comprehension of sixth-graders and whether direct instruction in text structure transfers to other narrative text. Its purpose is to further bridge the chasm between the researchers and teachers with knowledge about instruction of macrostructure in narrative discourse processing, which to date has been heavily weighted toward the theoretical.

Definition of Terms

During this decade of research on the structure and comprehension of stories, much confusion exists in the literature regarding two key terms: story grammar and story schema. For this reason, it is essential to differentiate these two terms from the outset.

Story grammar refers to the underlying structure of the text of stories (McConaughy, 1982). The grammar describes general categories for the components of well-formed story text and describes rules for the way these components are organized. These general rules and categories can be applied to any particular story in order to depict its underlying structural organization regardless of the specific content.

Story schema refers to the general cognitive structure in the mind of the listener or reader (McConaughy, 1982). The schema describes the internal cognitive structures which people have in their heads and use for processing information in a narrative text. The cognitive structures describe a "mind set" or notion of what a story is and what types of information should be included in a story text. By using this cognitive schema, the reader sets up expectations for what is coming next in the story, operates in reconstruction of story information during recall, and determines what information is considered most important.

A term was not found in the literature to describe the type of instruction that builds story schema in readers. So the researcher coined the term "macrostruction" (combining "macrostructure" and "instruction") to refer to instruction which explicitly assists readers in identifying and using the underlying structure of text in the comprehension process.

Current Research

A brief review of the literature shows that most of the research concerning narrative macrostructure has been descriptive in nature, with very little addressing its practical use in the classroom. This research has been designed to identify and explain the elements of story grammar and story schema. To date, four story grammars have been developed (Mandler & Johnson, 1977; Rumelhart, 1975; Stein & Glenn, 1977a, 1979; Thorndyke, 1977), with most research on story schema revealing similar configurations and results. Thus, the major intent of current research has been to delineate what constitutes story grammar and story schema.

As stated previously, comparatively few studies have been designed to examine the practical implications of story grammar and story schema research. Six activities have commonly been suggested for developing story schema, but they lack empirical evidence to support the

assumption that they accomplish that task (e.g., reading aloud, prediction, macro-cloze, scrambled stories, sorting, and retelling stories). There is not a sufficient amount of research to justify the effectiveness of these macro-structure instructional methods. Only 10 studies were found relating to the area of direct instruction in identifying story elements (i.e., story grammar), with some evidence suggesting it is effective in improving comprehension. Several of the studies in this area have serious limitations.

Gaps appear in several areas of the current literature. For example, little is known concerning the power of narrative text structure training on story schemata to facilitate the "rearrangement" of scrambled text. The effects of story structure training on average and above average readers has not been explicitly studied. And finally, no work was found that investigated story mapping's effects on high order thinking/reading skills.

Research Design

The following research design was tested by using one experimental and one control group. The experimental group of students were given training in identifying story elements and using a story map with basal stories. The control group was involved in a literature program where basal stories and trade books were read, vocabulary was self-selected, and related tasks (e.g., skill and drill

work) were completed. Both groups read similar stories in similar basals during the treatment period. Before and after the 4-week treatment period the experimental and control groups were administered measures, which consisted of two basal stories (scrambled and unscrambled) followed by a written free-recall, prompted-recall questions, short answer questions, and background questions. This procedure allowed the testing of the following research hypotheses pertaining to comprehension of stories, building of story schema, improvement of high order thinking/comprehending skills, and transfer of learning.

Comprehension

Sixth-graders who receive narrative level structure instruction (macrostruction) by using a story map with basal stories recall more idea units under both free and prompted conditions on scrambled and unscrambled transfer stories than a comparable control group who participates in a literature reading program.

Story Schema

Sixth-graders who receive macrostruction by using a story map with basal stories recall and recognize more idea units in a "well-formed" manner on a scrambled transfer story than a comparable control group who participates in a literature reading program.

High Order Thinking/
Comprehending Skills

Sixth-graders who receive macrostruction by using a story map with basal stories produce more text implicit (TI) responses to interpretive and applicative questions on both scrambled and unscrambled posttest transfer stories than a comparable control group who participates in a literature reading program.

Transfer of Learning

Sixth-graders in the treatment group who participated in a pretest baseline measure, consisting of a scrambled and unscrambled story followed by a written free-recall, prompted-recall questions, and short answer questions, achieve higher comprehension scores and provide more TI responses on a transfer-task test (i.e., the posttest) than a comparable control group who participated in identical pre- and post-measure situations.

Research Hypotheses

Free-Recall Comprehension

1. There is a statistically significant difference within subjects for the main effect of time.

2. There is a statistically significant difference within subjects for the main effect of text.

3. There is a statistically significant difference between subjects for the main effect of treatment.

4. There is a statistically significant interaction between time and text.

5. There is a statistically significant interaction between time and treatment.

6. There is a statistically significant interaction between text and treatment.

7. There is a statistically significant interaction between time, text, and treatment.

Prompted-Recall
Comprehension

1. There is a statistically significant difference within subjects for the main effect of time.

2. There is a statistically significant difference within subjects for the main effect of text.

3. There is a statistically significant difference between subjects for the main effect of treatment.

4. There is a statistically significant interaction between time and text.

5. There is a statistically significant interaction between time and treatment.

6. There is a statistically significant interaction between text and treatment.

7. There is a statistically significant interaction between time, text, and treatment.

Summary

There is a need to further investigate the effect of macrostruction with the use of a story map on comprehension. Several terms were defined relating to the literature reviewed, and a brief overview of current research was given. The design of the study tested the four areas of comprehension, story schema, high order thinking/ comprehending skills, and transfer of learning. The chapter concluded by stating the research hypotheses tested by the experimental design of the study.

Chapter 2

REVIEW OF RELATED LITERATURE

Introduction

The literature reviewed that follows forms a theoretical base upon which this study is building new research discoveries. The questions upon which this study is based arise because of a possible need to investigate new factors which affect readers' ability to recognize and use narrative text structure during comprehension and thinking. The literature reviewed in this study falls under six major headings: definitions of story grammar and story schema, story grammar and story schema research review, suggested methods for developing story schema, research on direct instruction of story grammar and schema, story schema and high order thinking/comprehending skills, and transfer of learning.

The interdisciplinary nature of these six areas of literature serve as the basis for the research question. How can we better use what we know about story grammar and schema research, suggested methods for developing it, research on direct instruction (macrostruction) of it, story schema and high order thinking/comprehending skills, and transfer of learning to discover more effective ways to directly teach reading comprehension of narrative text?

Story Grammar and Story Schema

Story Grammar

As stated in Chapter 1, a story grammar is a set of rules that define a text's structure (Whaley, 1981). Currently there are four major goal-directed story grammars derived from traditional folktales or fairy tales. These grammars were developed by Rumelhart (1975), Thorndyke (1977), Mandler and Johnson (Johnson & Mandler, 1980; Mandler & Johnson, 1977), and Stein and Glenn (1977a, 1979). Each story grammar will be briefly explained below.

Rumelhart's (1975) story grammar was one of the first, and served as a basis for variations by the three other story grammars. He proposed that a Story consists of a Setting followed by an Episode: STORY —> SETTING + EPISODE. The Setting forms a structure which includes Place, Time, and Characters and also allows for the remainder of the story.

The Episode is broken down further into a series of elements that graphically portray a tree diagram. These Episodic elements are:

1. Change of State: A precipitating Event that causes an internal Response in the main Character.

2. Internal Response: The main Character's covert response to a Change of State and his or her formation of a Goal.

3. External Response: A planful, overt attempt to achieve a Goal.

4. Event: A group of External Responses which attempt to achieve the Goal or Subgoal of the main Character.

5. Reaction: The main Character's response to the attainment or nonattainment of a Goal.

Thorndyke's (1977) grammar for a prototypical narrative structure is also stated in equation form: STORY —> SETTING + THEME + PLOT + RESOLUTION. This equation provides the top-level structure for stories. Each component of the equation is explained below.

1. Setting: Establishes the Time, Location, and main Characters.

2. Theme: Is the general focus of the Plot. The Theme is a stated or implied Goal for the main Character to achieve, and is often preceded by Events leading up to and justifying it.

3. Plot: Includes an indefinite number of Episodes, each of which is a cluster of actions comprising Attempts to achieve a Goal or a Subgoal and the Outcomes of these Attempts.

4. Resolution: Is the final result of the story with respect to the Theme. It consists of either a successful attainment of the Goal, or a response of the main Character to the state of affairs at the Outcome.

Thorndyke's grammar generates a representation of stories in a hierarchical structure that has as intermediate nodes actual propositions from the Story.

Mandler and Johnson's (Johnson & Mandler, 1980; Mandler & Johnson, 1977) story grammar identifies six major story elements:

1. Setting: Which introduces the protagonist (main Character) of the first Episode and may include statements about Time, Locale, or Props.

2. Beginning: In which some precipitating Event occurs.

3. Reaction: The protagonist's internal Simple Reaction to the Beginning and his or her formation of a Goal.

4. Attempt: The planful effort to achieve a Goal.

5. Outcome: The success or failure of the Attempt.

6. Ending: The long-range Consequence of the action, the final Response of a story Character, or an emphatic statement.

These six story parts comprise a hierarchical scheme similar to that of a family tree or an organizational chain of command.

Stein and Glenn (1977a, 1979) initially break down a story into two parts: a Setting plus an Episode. The Setting begins the story by introducing the protagonist, or temporal context pertaining to the development of the

Episode. The remaining story information falls under the Episode, which consists of a sequence of five categories:

1. Initiating Event: Contains some type of event or action which marks a change in the story environment.

2. Internal Response: The Response of the protagonist is triggered by the Initiating Event. The Internal Response can include Goals, affective states and cognitions, and serve to motivate subsequent behavior.

3. Attempts: Actions which describe overt behaviors triggered by the Internal Response.

4. Consequence: The attainment or nonattainment of the Character's Goal.

5. Reaction: A character's response to the Consequence or broader Consequences caused by their Goal attainment.

According to Stein and Glenn, these categories always occur in a specific temporal order.

Story Schema

A story schema is defined by Mandler and Johnson (1977) as "an idealized internal representation of the parts of a typical story and the relationships among those parts" (p. 111). Various studies have indicated that the schema in an individual's mind is very similar to the four story grammars identified above (Kintsch, Manel, & Kozminsky, 1977; Rumelhart & Ortony, 1977; Stein & Nezworski, 1978). Further studies have demonstrated that

there are even similarities across cultures (Brewer, 1985; Kintsch & Greene, 1978; Mandler, Scribner, Cole, & DeForest, 1980; Steffensen, Joag-Dev, & Anderson, 1979), with slight variations occurring in grammar elements and their importance. However, no matter what the subtle variations in a given story schema are, they are all composed of high-level propositions that facilitate a top-down mode of processing story data. By organizing story information in conceptual nodes (e.g., Setting, Problem, Goal, etc.) and establishing relationships (causal, etc.) among these nodes, understanding and comprehension can occur.

The active relationship between story schema and the structure of story text in reading is based on a schema-theoretic model of understanding. According to this way of thinking, schema theory is basically a notion about the structure of knowledge. This theory asserts that all knowledge is packaged into units. These units are the schemata. A schema, then, is a data structure for representing the generic concepts stored in memory (Rumelhart, 1984).

The central function of story schema is the interpretation of an event, object, or situation--in the process of comprehension. It is a kind of informal, internal, personal theory about the nature of events, objects, or situations faced that each reader develops. The total set of schemata available for interpreting the world in

a sense constitutes one's private theory of the nature of reality.

One primary concern associated with a schema in general, or in a story schema, is whether it gives an adequate account for various aspects of the current situation (i.e., the story text). Determining that a particular configuration (structure) of schemata accounts for the data presently available to our senses (story text) requires acceptance or rejection of promising schema. Therefore, the fundamental process of comprehension is similar to hypothesis testing, evaluation of goodness of fit, and parameter estimation (Rumelhart, 1981). A reader of a story text, then, is presumably evaluating his or her story schema with the most plausible interpretation of the text's structure. Readers are said to have understood the text when they are able to find a framework (story schema) which offers a coherent account of the story text's structure.

Once readers develop schemata that are moderately successful, those schemata become a source of predictions about unobserved, novel, or similar events (Rumelhart & Ortony, 1977). Schema theories are utilized to make inferences with some confidence about these events. Readers need not observe all aspects of a situation (i.e., the story text) before they are willing to assume that some particular configuration of schemata offers a satisfactory account. Once the reader has accepted a particular

schema (e.g., story schema), the schema provides a richness which goes far beyond observations. The reader places complete confidence in their use and reliability. This activity accounts and allows for interpretations of a story's structure that far exceed what is specifically stated in the text. A reader can therefore "fill in the gaps" where the story is vague or void.

Story Grammar and Story Schema Research Review

Aims of the Research

The primary purpose of story grammar research has been to verify that individuals do use an internally developed story schema. Study results overwhelmingly support the contention that readers expect particular story structures and that they use schemata when called upon to understand and remember stories (Chodos & Mosenthal, 1978; Mandler, 1978; Mandler & Johnson, 1977; Rumelhart, 1978; Stein, 1979; Stein & Glenn, 1979; Thorndyke, 1977; Whaley, 1979).

Another purpose of story grammar research has been to describe "the" story schema that individuals use. The four grammars cited and explained earlier are testament to the difficulty and complexity of this task. Each study cited initially in this chapter has supported the validity of its own "brand" of story grammar with replications

further verifying their "truthfulness." Yet, how can four variations of "a" story grammar exist?

Speculations about the answer derived from the research include (a) that people use all four story schemata, (b) the four grammars represent four regional/cultural variations, and (c) the four grammars vary only slightly and could be subsumed by a more general grammar. This last speculation will be discussed later, since this study attempts to utilize a "higher-level" story schema.

A final purpose of story grammar research has been to analyze the development of individuals' story schema at various ages. The extent to which individuals use story schema differs significantly with age (Mandler, 1978; Mandler & Johnson, 1977; Stein & Glenn, 1977a, 1977b, 1979; Whaley, 1979). Younger children appear to use story schema less than do older children and adults because their story schema is less developed. There is further evidence to suggest that older children and adults have more complex and elaborate concepts of stories (Stein & Glenn, 1977a; Whaley, 1979). Research in this area of story schema does not address the issue of whether children use text structure in a similar or a different manner than do adults.

Results of the Research

Researchers postulate that readers/learners use a story schema in three general ways: (a) as a set of

expectations for the structure of stories, (b) to facilitate comprehension, and (c) to improve memory of text (R. C. Anderson, 1977; Mandler & Johnson, 1977; Stein, 1979). Therefore, schemata guide individuals to look for important aspects of a story, to know when the story is complete, and to anticipate certain types of information (Mandler, 1978; Whaley, 1981).

This view of story schema highlights two important functions: schema allocates attention and schema aids recall. Story schemata facilitate attention allocation to various aspects of the story (e.g., Setting, Goal, Resolution, etc.). In addition, they aid recall by providing a general framework for types of information (e.g., Setting, Goal, Resolution, etc.). Both activities permit the reader/listener to make inferences, filling in information when the content of the text is forgotten or unclear (Mandler, 1978; Mandler & Johnson, 1977).

Current Methods for Developing Story Schema

Little empirical research undergirds current speculations as to what kind(s) of instructional procedures foster the development of a story concept. In fact, only a handful of research studies to date have even attempted to explore whether knowledge of story structures can or should be taught, and how that knowledge would affect comprehension. Further research is needed regarding how and under what

conditions knowledge of story structure develops (i.e., incidental exposure, incidental instruction, direct instruction, etc.).

Nonetheless, many instructional strategies and tasks have been suggested as means of developing story schemata. Listed below are six commonly suggested activities (Whaley, 1981).

1. Reading aloud: Providing children with many opportunities to hear and experience stories may enhance their knowledge of story structures. Reading to them regularly is one way to provide this experience.

2. Prediction: Students read incomplete stories and tell aloud or in writing what they think comes next. These "finish the story" exercises involve labeling and describing parts of stories.

3. Macro-cloze: This task is similar to a traditional cloze activity, where single words are deleted, except that, here, whole story categories are deleted (e.g., Setting, Beginning, Reaction, Goal, etc.). Any number of sentences may be omitted. Students then read the text and supply the missing information orally or in writing.

4. Scrambled stories: For this activity, a story should be separated into story grammar categories and jumbled. Students then read the scrambled story and reorder it to make a "good story."

5. Sorting: Students read a brief story and then the teacher gives them sentence strips of all the sentences in the story. The students are asked to sort the sentences into piles to show which ones go together.

6. Retelling stories: Allow students to retell simple stories. This strategy is believed to heighten their awareness of common story structures.

Research on Direct Instruction of Story Grammar

There are 10 studies that deal with direct instruction in story text structure (macrostruction). The first two studies can only be considered applicable to instruction in an incidental sense. In one such study, Bower (1976) had subjects first read a biography about a fictitious poet. Then he had half the subjects read two biographies with similar macrostructures while he had the other half read two unrelated texts. When they were asked to recall the original biography, experimental subjects recalled more of the macrostructure but interconfused details of the second text and third text with the first text. The similarity of the three passages created macrostructure facilitation on one hand, but detail interference on the other. In a similar study, Thorndyke (1977) found that subjects who read a second story with the same structure as, but different Characters from, the first story recalled more second story information than those whose second

stories had the same Characters as, but a different structure from, the first.

A third study, by Gordon (1980), was designed to directly examine the effects story structure instruction has on comprehension. Over a period of 8 weeks she trained fifth-grade students to apply a simplified story schema to their usual basal reader stories. On a transfer story, these students recalled significantly more, particularly certain categories of high-level information, than a placebo of an untreated control group. She interpreted the findings as supporting the notion that direct instruction in story schemata provides students with a transferable framework for storing and retrieving textually presented information.

Short and Ryan (1984) trained 56 fourth-grade boys who were poor readers in seven sessions to identify story grammar in an effort to increase their comprehension monitoring. The strategy training produced dramatic gains in comprehension of story information. They interpreted their findings to mean that story grammar training appeared to provide less skilled readers with an organizational framework within which to encode and integrate new story information and to structure retrieval of story information.

Tackett, Patberg, and DeWitz (1984) investigated the effects of story structure instruction on the recall of sixth-grade students with low socioeconomic background. Students identified as having a poorly developed concept

of story structure received a treatment similar to that used in a study by Dreher and Singer (1980), where a story structure chart--composed of four major proponents: Setting, Goal, Plot, and Ending--was utilized in a 6-day insturctional plan. Results showed that the treatment group recalled more information than the control groups, but did not recall any more high-level story propositions.

Greenwald and Rossing (1985) trained fourth-graders in story grammar and a self-monitoring routine using Pearson's (1982) sotry map. Results indicated improvement in comprehension of salient story information and maintenance of instructional effects on a delayed post-measure. Similar use of story schema occurred under both free and forced immediate recall conditions. Greenwald and Rossing found that results of their study indicated that the internal knowledge of story structure was brought to a conscious level and was used to direct and monitor comprehension. These findings indicated that direct text structure instruction was an appropriate teaching strategy.

Buss, Ratliff, and Irion (1985) taught the five story grammar rules of Stein and Glenn (1979) to 10 third-graders who were identified as having little knowledge of story structure. Each day the teacher taught a rule, then read a children's literature story and led a classroom discussion. During week 2, the teacher gave reinforcement activities for the five story rules. The control groups received

regular basal instruction. The instructional procedure substantially improved story structure knowledge and comprehension on the recall and probed-recall measures, but only modestly for the delayed posttest. Knowledge of story structure did not show a marked increase. There was a positive correlation between knowledge of story structure and story comprehension. Buss, Ratliff, and Irion concluded that more instructional time than 2 weeks may have been needed to sufficiently build adequate story structure knowledge in the children. Even though some improvements were noted, the methods employed in this study may not have adequately overcome the lack of story structure knowledge.

While the studies above suggest that story grammar/mapping can be a promising heuristic, the following two research studies indicate that direct instruction of story structure is not as promising. Dreher and Singer's (1980) research included 28 fifth-graders and used a story structure chart and three stories to teach students story grammar. On a fourth story, subjects were asked to read and recall. Results indicated that direct instruction in story structure identification did not increase the amount or type of story information that was recalled. Their explanation for this finding was that perhaps students at the fifth-grade level had already developed story structures for comprehending and recalling. Therefore,

training would not benefit their story comprehension.

A possible explanation for the findings in Dreher and Singer's study may lie in the arrangement and use of the story structure chart. This chart, which was merely an arrangement of five questions on a page with blank lines for written responses, did not explicitly relate the story elements in a causal framework, nor did the instruction appear to make the macrostructure of the stories explicitly clear. The students may have perceived that they were just answering another set of questions, and did not grasp that the text structures were related in any way. Furthermore, only three training sessions may not have been sufficient to show significant results due to the complex conceptual nature of even a simple story grammar. In addition, the type of stories may have interfered with the results, since these stories were short, simple, and unlike those usually encountered in regular basal readers.

Finally, Sebesta, Calder, and Cleland (1982) taught Title I teachers and Title I fifth-grade students to create true narrative diagrams (a story grammar device) as designed by Applebee (1978). This instruction apparently improved the story comprehension of the teachers, but unfortunately, did not improve that of the fifth-grade remedial students. However, teachers in the initial study who presented the diagram to their regular students reported "good" cognitive

(intellectual) and affective (emotional) responses to the stories and comprehension questions.

Sebesta et al. did not consider their findings paradoxical, since even a story grammar is a complex concept and is not likely to substantially influence story comprehension of children when it is taught by researchers during a few experimental sessions. The teachers, on the other hand, would have naturally caught on to the story grammar concept because of their more advanced cognitive abilities and knowledge, thereby explaining their comprehension gains in spite of only a few training sessions.

Story Schema and High Order Thinking/ Comprehending Skills

According to the research, an understanding of schema seems to have a positive relationship with the understanding and recall of high-level propositions in stories (cf., Brown & Smiley, 1977; Goetz, 1979; Mandler & Johnson, 1977; Rumelhart, 1975; Stein & Glenn, 1978; Thorndyke, 1977; van Dijk & Kintsch, 1976). No research was found that examined the effectiveness of direct story grammar instruction beyond the simple understanding and recall of stories to high order thinking and comprehending skills. Further studies (such as the present study) are needed to examine the effectiveness.

Theoretical evidence points to the likelihood that knowledge of story grammar facilitates and promotes readers'

ability to utilize higher level thinking/comprehending skills. First, several current models of memory (J. R. Anderson & Bower, 1973; Kintsch, 1972, 1974; Rumelhart, Lindsay, & Norman, 1972) suggest that connected discourse (i.e., story grammar/structure) permits the construction of a highly integrated or interconnected representation in memory that is both easier to construct and more efficient at retrieval. In these models, information is represented in memory as a network of interconnected or linked notes. The nodes represent concepts (e.g., story concepts: Setting, Goal, etc.), and the links between represent the relationships between the concepts (e.g., causal relationships). In connected discourse, the same concepts (Character[s], Objects, Events, etc.) will be referenced in many sentences, so that there will be fewer different concepts to represent than in a list of unconnected story sentences. According to this line of thinking, unrelated story sentences are harder to learn than connected discourse, because the construction of a new node is more difficult than constructing additional links to existing nodes. Since higher level thought/comprehension involves the analysis and synthesis of concepts, the probability of it occurring is greater because the number of interconnections between concepts increases. More efficient access of and input to the number of nodes, and paths between nodes, would theoretically suggest that higher thinking/comprehending could occurs.

This analysis is supported by the findings of the following studies: Levin (1970); deVillers (1974); Kintsch, Kozminsky, Streby, McKoon, and Keenan (1975); and Manelis and Yekovich (1976).

Second, when readers are more consciously aware of story connectedness (the causal and hierarchical relationships between story elements), they are more likely to engage in deep encoding (storage of meaning), thereby making accessible more story data from which to do higher thinking/comprehending. Several levels-of-processing analyses (R. C. Anderson, 1970, 1972; Craik, 1973; Craik & Lockhart, 1972) suggest that connected discourse found in stories may be remembered better because it is processed more deeply. In this analysis, processing of verbal material is said to progress from processing of surface orthographic and/or phonological features to elaborate representation of meaning. Each successive level of processing leaves its own material representation, with deeper levels leaving more durable codes. This is evidenced by the fact that the verbatim form of recall is more rapidly forgotten than meaning (Fillenbaum, 1966; Sachs, 1967). Craik and Lockhart (1972) purport that the more cognitive effort expended upon encoding at one level, the less information will be retained at other levels. Thus, because individuals with developed story schema are more likely to engage in deep, meaningful encoding, then they should retain more

information about the meaning (and less about the form of sentences) and be better able to utilize the story information for further thinking. LaBerge and Samuels' (1974) model of reading also supports Craik and Lockhart's notion. The model suggests that allocating attention at distinctive features embodied within a text generates recognition and encoding of those features while ignoring others. In summary, knowledge of story grammar provides a useful and meaningful organization that allows for the deep schema processing and better information base with which to do more critical thinking (J. R. Anderson, 1974; Pezdek and Royer, 1974; Thorndyke, 1977; White & Gagne, 1976). The relationships (causal, superordinate, subordinate, etc.) among the story elements enhance the depth of encoding in the existing schemata.

The third prediction for deeper thinking/comprehending with improved story schema is related to the second. If individuals are more likely to process normal connected story discourse at a deep, meaningful level, then they should be more likely to engage in inferential and constructive processes (e.g., interpretive and applicative levels of thinking). This prediction follows from the position that inference and constructive processes are a vital component of the comprehension of and memory for story discourse (R. C. Anderson & Shifrin, 1980; Goetz & Armbruster, 1980; Spiro, 1980; Thorndyke, 1977).

Fourth, the probability of high level thinking/comprehending occurring as a result of story grammar knowledge is plausible because readers are better able to relate the story text to what they already know. The psychological unity of connected elements in story discourse may derive from the fact that the reader's knowledge, beliefs, and expectations permit him or her to organize and interrelate elements in text and/or personal background knowledge. Although no research was found that explored that possibility, this study has been designed to do so.

In summary, most research about story grammar and story schema has been descriptive in nature. The work has focused on identifying the underlying textual and cognitive structures of and for stories. Several methods for developing story schema have been suggested, but empirical evidence substantiating their effectiveness is lacking. The research that does exist in direct instruction of text structure is narrow in scope and limited in nature. Investigation of how macrostruction affects high order thinking/comprehending skills is missing in the literature, despite theoretical evidence indicating its plausibility.

Transfer of Learning

The transfer of learning from one situation to another is of great importance to the basis of this study. Gagne (cited in Gagne & Gepart, 1968) describes two types of

transfer: lateral and vertical. He describes lateral transfer as a process of generalizing that spreads over a broad set of situations which are close to the same level of complexity. Vertical transfer is defined as the "effects that learned capabilities at one level have on the learning of additional material at higher levels" (Gagne, cited in Gagne & Gepart, 1968, p. 335). Gagne advocates instructional procedures and methods that not only affect the acquisition of further knowledge (vertical transfer), but affect the broad application of learned capabilities to novel and practice situations (horizontal transfer). This process, then, is dependent upon mastery of skills and processes that can then be generalized and applied to a variety of activities.

Whether these skills and processes are generalized to other learning situations as a result of narrative macrostruction is examined in this study by testing to see if subjects recall (freely and prompted) more story grammar idea units (lateral transfer) and provide more TI responses to interpretive and applicative questions (vertical transfer) to basal stories when there is instruction in story mapping. The stimulus of the hierarchical visual framework provided by the story map should help learners apply their knowledge of story grammar and causal relationships to the comprehension of successive readings.

The issue of verbally mediating transfer relates to this study. Wittrock (cited in Gagne & Gepart, 1968) describes mediators as providing "verbal stimuli used to make distinctions and generalizations that are not obvious to the subject" (p. 165). Thus, a mediator helps transfer known concepts or information to new concepts. In the same study Wittrock found in the research on verbally mediated transfer that children may be able to transfer the use of rules and strategies to other situations that do not involve the same procedures and concepts developed by the original training.

Gagne's (cited in Gagne & Gepart, 1968) hierarchical learning set theory states that the use of mental organizations is also an important influence on the ability to transfer learning both horizontally and vertically. According to his theory, new learning depends upon the use of prior knowledge concerning the relationships (i.e., superordinate, subordinate, causal, etc.) of concepts, procedures, or objects relevant to the task. The point of view brings up the point that what is known about the underlying structure of a story should be verbally examined. It is important to examine whether or not story mapping used to record a discussion of a story's story grammar elements can act as a verbal and visual mediator between the concepts and information stated and implied in the story and the relationships stated and implied among those concepts.

In addition, Gagne (cited in Gagne & Gepart, 1968) expresses the importance of the effects of visual imagery on learning new information and the transference of that process to novel situations. The visual image provides a meaningful context within which to internalize concepts and procedures that can serve as learned capabilities to be generalized and applied to various new activities.

Summary

The research reviewed in the six areas of definition of story grammar and schema, story grammar and story schema research review, suggested methods for developing story schema, research on direct instruction on story grammar and schema, story schema and high order thinking/comprehending skills, and transfer of learning interrelate to form the basis for investigating questions addressed in this study. The need for a consensus regarding what type of reading comprehension instruction helps students recognize and make use of story structure and the effects of this macrostruction is formed from the conflicting recommendations and suggestions of studies to date. The information found in studies suggests that such training has and has not been beneficial to comprehension, depending upon the ages and/or reading ability levels of readers. These equivocal findings open up the possibilities of research designed to explore effective ways narrative

macrostruction can and does facilitate reading comprehension. The information gathered from story schema, high order thinking/comprehending skills, and transfer of learning indicates that memory, procedural knowledge, and transfer of learning by the organization of information in a story map may affect mental structures in ways not yet explored.

The challenge comes in devising and testing ways in which these mental structures (schemata) are affected. This study is designed to examine how effective the use of story mapping is on a particular group of subjects on comprehension of narrative text. It further investigates what other effects the development of story schema will have on the ability to use and perform other operations. An attempt is being made to discover new effects that macrostruction (i.e., story mapping) may have on students' reading comprehension/thinking abilities.

Chapter 3

RESEARCH METHODOLOGY AND DESIGN

Introduction

This study is designed to investigate the effects of direct text structure instruction (macrostruction) on the comprehension abilities of readers. This chapter will present a description of the sample and teachers, materials used, study procedures, design used, and scoring/rating system utilized in this study. Specific attention is given to (a) what materials were selected and how they were developed into measurement instruments, (b) the procedures used in piloting and administering the treatment, and (c) the rating/scoring system developed for subject responses on the measurement instruments.

Subjects

The subjects in this study were 48 sixth-graders from a suburban/rural setting in central California. A convenience sampling measure was utilized, with the subjects coming from two classrooms within the same school. One class of 27 subjects served as the control group, and the other class of 21 subjects as the treatment group. Basic information regarding the subjects is listed in Table 1. The descriptive information includes (a) number,

Table 1. Comparison of Treatment and Control Group Subjects

	Treatment	Control
N	21	27*
CTBS		
4th Quartile	76%	55%
3rd Quartile	14%	20%
2nd Quartile	10%	7%
1st Quartile	0%	18%
Sex		
Male	51.9%	61.9%
Female	48.1%	38.1%

*With six outliers removed N = 21.

(b) percentage of subjects scoring in each quartile on the January administration of the Comprehensive Test of Basic Skills (CTBS), and (c) sex.

Six subjects in the control group were identified as outliers on the free-recall portion of the unscrambled pretest. Each of the six subjects had written nothing (or only a short sentence fragment of less than six words) on the unscrambled pretest, yet had written an extended account of the scrambled story read the next day (and on the posttest stories, also). The prompted-recall, short answer, and background knowledge questions were all completed for the unscrambled pretest. The classroom teacher administering the measure was not specifically aware as to why or how this might have happened, but believed that possibly the six subjects may have finished the test early because of an activity they had to leave for.

The classroom teacher indicated that the amount of writing on the unscrambled pretest did not accurately represent the recall ability of the six subjects, nor their ability to communicate this knowledge in written form. Furthermore, in comparing the written responses of the six subjects across all four story measures, the written free-recall on the unscrambled pretest did not appear to be an accurate measure of these subjects' recall ability, nor their ability to communicate that knowledge in writing. Therefore, in order to reduce the possibility of confounding

the results, these six subjects' scores were removed from the comprehension analysis. However, they were included in the short answer analysis because all responses were intact.

Current Reading Program

The reading program in place for both treatment and control classrooms prior to the study was similar (based on researcher observations and interviews). Each was described as a "literature" program, utilizing sixth-grade basals and trade books in an individualized manner. Subjects at or above grade level on the CTBS read a variety of selections, were responsible for learning new vocabulary, and engaged in a variety of related tasks. Subjects below grade level on the CTBS participated in the literature program plus a skill development program. Little direct instruction was employed in either classroom, with most work done individually.

Teachers

Information regarding the two teachers is listed in Table 2. The descriptive information includes (a) years teaching, (b) sex, (c) undergraduate teacher training, (d) undergraduate reading classes, (e) recent reading coursework, and (f) Flanders and Amadon Interaction Analysis results. The similarities in these categories seem to indicate that the instruction in the treatment and control classrooms was comparatively similar.

Table 2. Comparison of Treatment and Control Teachers

	Treatment Teacher	Control Teacher
Year Teaching	1st	1st
Sex	Male	Male
Undergraduate Teacher Training	Secondary Content	Secondary Content
Number of undergraduate reading classes	1	1
Number of reading classes taken in last 4 months	1	1
Flanders & Amadon Interaction Analysis	Teacher Talk Indirect Influence Asks Questions Accepts or Uses Ideas of Students Direct Influence Lecturing Giving Directions Student Talk Student Talk Response Student Talk Initiation	Teacher Talk Indirect Influence Asks Questions Accepts or Uses Ideas of Students Direct Influence Giving Directions Criticizing or Justifying Authority Student Talk Student Talk Response Student Talk Initiation

Materials

Four stories from Levels 17 and 19 of the Pathfinder Reading Program (1978) were used in the study. These stories were selected by the researcher for several reasons: (a) the texts had not been used in the school district in which the experiment was conducted, so there was little likelihood of a subject having already read one of the stories; (b) the stories were all over 1,000 words in length, making them more typical of the type of story sixth-grade children encounter in reading instruction than the short, 100-word stories used in much of the earlier research; and (c) the four stories were considered reasonably well formed, composed of those elements considered to be essential to a true story grammar (Mandler & Johnson, 1977; Rumelhart, 1975; Stein & Glenn, 1977a; Thorndyke, 1977).

The four stories used in the study were (a) Story A, "Never Trust a Goat;" (b) Story B, "Nana Miriam;" (c) Story C, "Something Fishy;" and (d) Story D, "Atalanta and the Race" (see Appendix A for copies of the stories). Using the Fry Readability Scale (Fry, 1978), the readability level for each was calculated and placed in Table 3. The researcher, treatment teacher, and a reading specialist rated each story within the background knowledge of the subjects (measurement of this factor will be discussed later).

Table 3. Stories Used in Pre- and Post-Measures

Story	Title	Fry Readability	Text Source	Original Source
A	Never Trust a Goat	5.0	The Widening Path, Level 19 (1978). Boston, MA: Allyn & Bacon, 41-46.	By R. L. Post, in American Girl, pub. monthly by the Girl Scouts of the U.S.A.
B	Nana Miriam	5.9	Majesty and Mystery, Level 17 (1978). Boston, MA: Allyn & Bacon, 210-216.	By Hans Baumann, from The Stolen Fire: Legends of Heroes and Rebels from Around the World (1974). Random House, Inc.
C	Something Fishy	6.9	Majesty and mystery, Level 17 (1978). Boston, MA: Allyn & Bacon, 272-282.	By James Holding, Jr., in Majesty and Mystery, Level 17 (1978).
D	Atalanta and the	6.3	Majesty and Mystery, Level 17 (1978). Boston, MA: Allyn & Bacon, 236-243.	By Betty Miles, from Free To Be You and Me (1974). Free to Be Foundation.

The texts of Story B and Story D were scrambled. Scrambled text refers to narrative discourse which is unclear in its structure and/or is lacking one or more story elements considered essential by story grammarians. This was done in a manner consistent with those methods identified by Pearson and Camperell (1981): (a) scrambling and permuting key sentences and paragraphs, (b) placing Setting information at the end of the story, and (c) moving the Theme or Goal to the end of the story. Stories B and D were scrambled in the following pattern: (a) the Setting was moved to the end of the story; (b) the Problem and Goal were moved near the end of the story; (c) the second Event was moved between the fourth and fifth Events, and the final Event was placed before the first Event; and (d) the Resolution was relocated near the beginning of the story. Story A and Story C were left intact and were considered unscrambled text, because they were clear in their structure and were composed of all the elements essential to story grammar.

Test questions were written by the researcher for each of the four stories. The questions followed the same format for all four stories (see Figure 1); the questions followed the original text pattern. Immediately following each story, subjects produced a written free-recall. A lined page was provided with these directions at the top: "Write everything you can remember about the

Story	Written Free Recall	Prompted Recall	Short Answer	Background Knowledge
U=Unscrambled S=Scrambled	0=Omission 1=Commission	0=Incorrect 1=Correct	0=Inaccurate 1=Script Implicit^{1} 2=Script Implicit^{2} 3=Text Implicit	0=No Experience 1= Experience

Figure 1. Sections and sequence of measures developed

story. Don't look back" (Taylor, Wade, & Yekovich, 1985) (see Appendix A for example).

Ten or 11 cued-recall questions came next. The questions were developed following the story line of each narrative, as designed by Beck, McKeown, McCaslin, and Burkes (1979) and Pearson (1982). They asked for information only considered to be high-level propositions in a story grammar (i.e., Setting, Character[s], Problem, Goal, Events, Resolution). The questions were arranged in a multiple-choice format, with four possible answers for each question. Several reading experts examined the questions for validity, making sure that they asked what was being measured. (See Appendix A for multiple-choice questions.)

In addition, five short answer questions were designed to measure high order thinking/comprehension skills. The questions were formatted after Ruddell's (1974) identified levels of comprehension and skill competencies. This model provided a framework for distinguishing the types and kinds of questions/answers utilized. It also ensured that the questions could be answered by various means as the scoring system would indicate.

For each story, Short Answer Question 1 was labeled "Valuing--personal judgement, interpretive." This type of thinking/comprehension involved the formulation of judgements based on evidence and implications in the material. Question 2 was "Valuing--character trait

identification, interpretive." It involved identifying Character traits based on inferences from story details and Events. Question 3 was "Valuing--author's motive identification, interpretive." This involved examining the author's intent, using previous experiences and knowledge to interpret the material. Short Answer Question 4 was "Predicting outcome, applicative." It involved developing an explanation or reason for a particular Prediction. Finally, Question 5 was labeled "Problem solving, applicative." Processing this meant identifying the Problem, pooling related information, forming plausible hypotheses, testing and searching for possible Solutions, and drawing conclusions and developing explanations (see Appendix A for actual questions used in pre- and post-measures).

After these questions, two Yes-No questions inquired as to whether the subjects had background knowledge or experience with the story's content (see Appendix A for questions used).

A story map developed by Beck, McKeown, McCaslin, and Burkes (1979) and utilized by Pearson (1982) was used in the treatment. This particular map was selected because it is a "higher-level" diagram/design of the four grammars discussed in Chapter 2 (see Figure 2). It includes all the elements defined by each of these grammars, as well as an arrangement of the story concepts in a pictorial or map

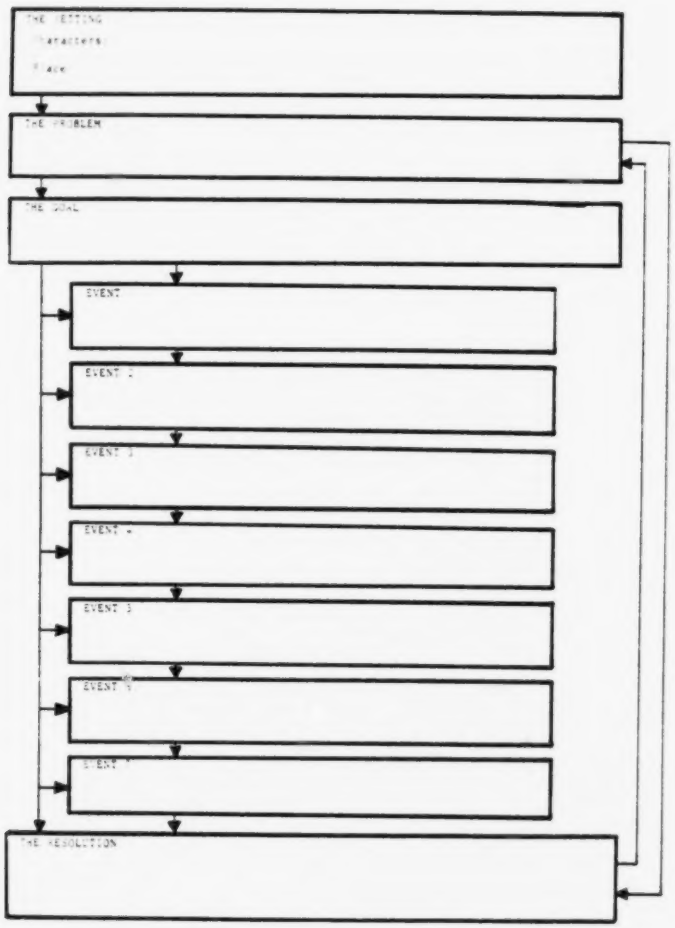


Figure 2. Story map

format. The story map serves as a graphic organizer which has been shown to be useful in organizing information in texts (Alverman, 1982; Ruddell & Boyle, 1984).

Procedures

All four stories and their affiliated questions were piloted prior to use in the experiment. Three fifth/sixth-grade combination classrooms in the same school building were used to house control and treatment groups in order to pilot the materials. The researcher and a reading specialist administered the pilot in each classroom. The purpose of the pilot was to identify any ambiguities or gaps in the materials that may have been overlooked in their development and preparation.

Both the control and treatment groups were administered a pretest on consecutive days. The pretest was composed of two parts, with each part administered on separate days. Half of each group received a scrambled story and the other half, an unscrambled one on each day. This took into account any order effect that may have resulted from story presentation. Each pretest consisted of a basal story followed by a series of comprehension measures. One story had a scrambled macrostructure and the other had an unscrambled macrostructure. Each story was followed by questions presented in this format: 11 written free-recall, 11 prompted-recall, 5 short answer/high order

thinking skills, and 2 background knowledge questions. Both groups received the same pretest.

The treatment group received direct instruction from their regular classroom teacher following the pretest. The treatment consisted of reading eight stories (two per week) from basal readers (see Table 4) and then using Pearson's (1982) story map, identifying the story elements (Setting, Problem, Goal, Events, Resolution). The initial stories were short, proceeding to more complex and longer stories with each ensuing one (see Appendix B for copies of the treatment stories). The teacher guided the students through the process during the initial stories, gradually shifting responsibility to the subjects with each new story (Pearson, 1985). The treatment lasted for 4 weeks (see Figure 3).

The researcher instructed the treatment classroom teacher on how to use the story map prior to his administering it as the treatment. The training process proceeded as follows:

1. This researcher explained the process in general terms to the teacher.

2. The teacher read Pearson's (1982) Occasional Paper.

3. The Occasional Paper was then discussed and several examples were discussed.

Table 4. Stories Used in Treatment

Story	Title	Story Element Emphasized	Responsibility	Text Source	Original Source
1	The Fox and the Robin	Character Place	T	Dreher & Singer (1980). The Reading Teacher, 34(3), 266.	Unknown
2	Fish Story	Problem Goal	T/S	Ginn Reading Program, Level 8, Unit 2 (1982). Lexington, MA: Ginn & Company.	By Robert Tallon, adapted from Holt, Rinehart, & Winston Reading Program.
3	Blue Jay and the Moon	Events Resolution	T/S	Flights of Color (1982). Lexington, MA: Ginn & Company, 306-309.	By Emerson N. Matson, in Legends of the Great Chiefs (1972), 24-27.
4	The Midnight Visitor	All	S	Impressions (1976). Boston, MA: Houghton Mifflin, 136-140.	By Robert Arthur, in Mystery and More Mystery (1967), Random House.
5	Rescued by Dolphins	All	S	Beacons (1981). Boston, MA: Houghton Mifflin, 370-378.	By Arthur C. Clarke, in Holt, Rinehart, & Winston (1963).

Table 4 (continued)

Story	Title	Story Element Emphasized	Responsibility	Text Source	Original Source
6	Sybil's Perilous Ride	All	S	Beacons (1981). Boston, MA: Houghton Mifflin, 513-522.	By Allena Champlin Best, from Sybil Ludington's Ride (1952).
7	Artic Fire	All	S	Beacons (1981). Boston, MA: Houghton Mifflin, 424-439.	By James Houston, in Frozen Fire: A Tale of Courage (1979), Puffin Books.
8	Mustang	All	S	Mountains Are for Climbing (1976). Lexington, MA: Ginn & Co., 76-79.	By Marguerite Henry, adapted from Mustang (1966), Rand McNally & Co.

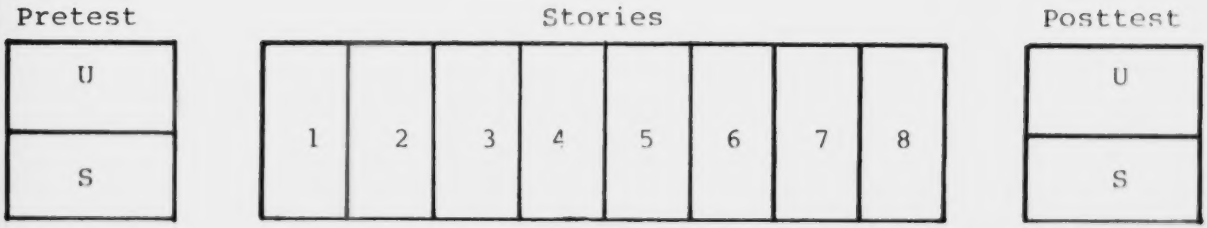


Figure 3. Treatment sequence .

4. The researcher demonstrated the instructional procedure in another classroom in the school while the treatment teacher observed.

5. Another discussion ensued regarding the demonstration/observation.

6. The teacher rehearsed the instructional strategy in a different classroom in the school.

7. Still another discussion occurred, centering around that experience.

8. The teacher then began the treatment with his own class.

Particular emphasis was placed on the effective use of the overhead projector in the process, development of prepared questions to lead the subjects through completing the map, explicit identification of the story parts and their causal relationships, and discussion of the story map upon its completion. Rehearsing the story mapping instructional strategy in this manner prior to the treatment period was an attempt to ensure adequate understanding, familiarity, and comfortableness with the procedure by the treatment teacher.

The control group continued with routine classroom instruction. Specifically, 15 minutes each day were devoted to checking vocabulary found in readings; 20 minutes were allotted to silent reading in basal stories similar to those of the treatment group or trade books, activity

(i.e., ditto) sheets (if subject was below grade level on the CTBS); and 15 minutes were spent in paired oral reading (with a helper, if needed).

Neither the treatment nor the control group discussed related background knowledge prior to the reading of any story. This instructional variable has been omitted because the purpose of this research was to see what effect the teaching of narrative text structure would have on comprehension. It was believed that the use of prereading activities would have confounded the results of this effort. Similarly, no vocabulary instruction preceded the reading of a story.

Finally, a posttest was administered at the conclusion of the 4-week treatment. The posttest was identical in format to the pretest, with both the control and treatment groups reading a scrambled and an unscrambled story followed by questions.

Design

This study utilized a 2 x 2 x 2 repeated measures design. The independent variables were the types of narrative text utilized (scrambled and unscrambled), the treatment groups (experimental and control), and the time of the test (pretest and posttest). The independent variables of text and time were repeated measures. The dependent variable was the test scores.

Research Hypotheses

To test the research hypotheses underlying this study, the preceding experimental procedure was conducted using two student groups. The presentation method used allowed the testing of four null hypotheses. The following research hypotheses address the question raised about the effect of the macrostruction training activities in the study upon the pre- and posttest measures of free- and prompted-recall on scrambled and unscrambled stories.

Free-Recall Comprehension

Ho(1a). The population mean scores of the free-recall comprehension are equal to the population mean scores for the main effects of time, text, and treatment.

Ho(1b). The population mean scores of the free-recall comprehension are equal to the population mean scores for the interactions of time x text, time x treatment, text x treatment, and time x text x treatment.

Prompted-Recall Comprehension

Ho(2a). The population mean scores of the prompted-recall comprehension are equal to the population mean scores for the main effects of time, text, and treatment.

Ho(2b). The population mean scores of the prompted-recall comprehension are equal to the population mean

scores for the interactions of time x text, time x treatment, text x treatment, and time x text x treatment.

Scoring

A scoring system was devised to rate each subject's response to the various types of tasks on the pre- and posttest. For the written free-recall a list of "idea units" (i.e., high-level story propositions/story grammar elements) was first developed for each story. There were either 10 or 11 idea units for each story (Character[s], Place, Problem, Goal, Events, Resolution), depending upon how many Events the story entailed. The four lists were checked by three reading experts for accuracy. The list of idea units was then used as a standard against which to rate the number of idea units subjects included in their written free-recall. If a subject did not include an idea unit, such as the Problem, their written free-recall would be rated as a 0 in that category; an error of omission. If a subject identified the story Problem, for example, but it was an incorrect inclusion, a rating of 1 would be given; an error of commission. For correctly including an idea unit, a rating of 2 was assigned. By differentiating between errors of omission and commission, it may be possible to distinguish unrecalled and incorrectly recalled material (see Appendix C for Story Idea Units).

Since the prompted-recall questions were multiple-choice, only one answer could be correct. So the scoring of 0 indicated an incorrect response, and a score of 1 indicated a correct one. There were 10 or 11 prompted-recall questions, each probing for information related to the idea units used in the written free-recall portion. Question 1 probed for Character information, Question 2 for Place information, Question 3 for story Problem information, etc. (see Appendix A for prompted-recall questions).

The short answer/high order thinking skills questions were rated on a scale from 0 to 3. A 0 rating meant that a response was inaccurate. A rating of 1 referred to a Script Implicit 1 response; the subject used his or her own experience to answer the question and no story information. A rating of 2 referred to a Script Implicit 2 response; the subject used some story information and some of his or her own background knowledge to answer the question. A rating of 3 referred to a Text Implicit response; the subject put together different story parts to arrive at the answer. These distinctions between question answer relationships were derived from the works of Pearson and Johnson (1978) and Raphael (1986).

Finally, the two background knowledge questions were based on a 2-point rating scale: 0 meaning no experience, and 1 indicating appropriate background experience. The

correlation coefficient for both groups on background knowledge of all four stories is .99.

The investigator scored and rated all four measures for each pre- and posttest story. A second rater was trained and rated 10% of the pre- and posttest written free-recall and short answer sections. The percentage of agreement between the two raters on free-recall was 98%. The percentage of agreement on rating the short answer high order thinking/comprehending questions was 89%.

Limitations of the Study

Despite every effort to control and account for all possible external and internal threats, there are several limitations to the study.

1. Six outliers. The six outliers in the control group may indicate a threat to the validity of the measures. Because these subjects' pretest scores on the unscrambled text did not seem to be an accurate indication of their knowledge and skills, there is reason to question the removal of their scores and running the data analyses for free- and prompted-recall without them. However, since the classroom teacher identified the quality of the students' responses as not representative of their true abilities, it follows that including their scores in the data would skew the results.

2. Teacher effect. There may be some element of teacher effect not accounted for in the comparison between

the two teachers. Because both teachers were in their 1st year of teaching, there is some reason to think that the instruction may not have been as complete as may have been possible with more established teachers. Beginning teachers are often learning to deal with all the aspects of the classroom/school learning environment, with instruction being just one of the many adjustments to make. However, since such careful steps were taken to account for the differences between teachers and to identify the numerous similarities between them, it is unlikely that some unknown element of teacher effect may have skewed the results.

3. CTBS testing and flu. During the 4-week treatment period the school district was also administering the CTBS over a 2-week period. The possibility exists that the lengthy testing period coupled with the experimental pre- and posttesting and instructional treatment may have caused a test effect, whereby subjects may not have performed as well on the posttest because of "burnout." In addition, a serious outbreak of the flu during the treatment period may have also provided some threat to the study. However, every effort was made to provide adequate transition periods between the CTBS testing and the experimental study testing and instruction, and every effort was made to provide the instructional treatment in spite of absences due to the flu.

4. Number of short answer questions. More high level thinking/comprehending questions could have given a greater number of responses from which to determine precisely which type of question and type of response interacted as a result of the treatmnet. However, since this aspect of the study was exploratory, the small number of questions is justifiably adequate.

5. Small sample. The small sample makes generalizing the results obtained to the population in general limited. More subjects (classrooms) and teachers would have remedied this limitation of the study. This limitation is cause for replication of the study with a larger sample.

Summary

This chapter presented a description of the sample and teachers, materials used, study procedures, design used, and scoring/rating system utilized. Before the treatment activities were applied, the subjects took the pretest to determine baseline knowledge and use of story structure. The treatment ensued for a period of 4 weeks, with two stories (plus instruction) per week. After the eight-story treatment a posttest measured the amount and types of comprehension from the baseline that had resulted from the macrostruction.

The pretest and posttest used were evaluated in a pilot administration and revised according to subject

response. In addition, a reading expert reviewed the questions to determine whether they actually tested what they were intended to test. Both measures were scored according to the specifications discussed previously by the investigator. A second rater was trained and rated 10% of the pre- and posttests to determine percentage of agreement between the two raters.

Chapter 4

FINDINGS OF THE STUDY

Introduction

This chapter will review the results of the study. Findings of differences between subjects and within subjects by type of comprehension (free- and prompted-recall) are presented first. An analysis of variance (ANOVA) was used to test the statistical hypotheses of group differences for comprehension. Then a frequency of ratings was used for the high order thinking/comprehending skills. In addition, a frequency of subjects accurately indicating idea units was used for high order thinking/comprehending skills and transfer of learning.

Results

The comprehension results were analyzed by a three-way ANOVA (time x text x treatment) with repeated measures on the first two factors. Two separate analyses were run, one for free-recall and another for prompted-recall.

Free-Recall Comprehension

The 2 x 2 x 2 repeated-measures ANOVA for free-recall (see Table 5) indicated statistical significance for all three main effects: time ($F = 126.75$, $df = 1.40$, $p < .001$), text ($F = 65.72$, $df = 1$, $p < .001$), and treatment

Table 5. Free-Recall Summary Table

Source		df	SS	MS	F
Between Subjects	41	1	411.40		
Treatment		1	44.02	44.02	4.80*
Subjects		40	367.38	9.18	
Within Subjects	126				
Time		1	337.16	337.16	126.75**
TimexTreatment		1	8.60	8.60	3.23
TimexSubjects		40	106.24	2.66	
Text		1	197.16	197.16	65.72**
TextxTreatment		1	2.89	2.89	.96
TextxSubjects		40	119.95	3.00	
TimexText		1	5.37	5.37	1.87
TimexTextxTreatment		1	1.91	1.91	.67
TimexTextxSubjects		1	114.72	2.87	
Total	167		1305.40		

*p < .05

**p < .001

($F = 4.80$, $df = 1, 40$, $p < .05$). For the main effect, time, the pretest mean of idea units freely recalled was 4.14, followed by the posttest mean of 6.98 idea units. Scrambled text had a mean of 4.48 idea units freely recalled, with a mean of 6.64 idea units on unscrambled text. The treatment group recalled a mean of 6.07 idea units freely, as compared to 5.05 for the control group (see Table 6). Interaction among the independent variables of free-recall did not reach statistical significance.

Prompted-Recall Comprehension

The prompted-recall repeated-measures ANOVA (see Table 7) indicated significance for two main effects: time ($F = 51.62$, $df = 1, 40$, $p < .001$) and text ($F = 29.86$, $df = 1, 40$, $p < .001$). For the main effect of time, the pretest mean of idea units correctly recognized was 8.65, followed by the posttest mean of 9.95. Scrambled text had a mean of 8.80 idea units recognized, while the unscrambled text mean was 9.81 (see Table 6).

Significant statistical interaction occurred between text x treatment ($F = 6.30$, $df = 1, 40$, $p < .05$) and time x text ($F = 12.75$, $df = 1, 40$, $p < .001$) (see Table 7). Interaction for the mean values of text x treatment for the treatment group on prompted-recall were 8.57 idea units on scrambled text and 10.05 on unscrambled text. Control group means were 9.02 idea units on scrambled

Table 6. Means for the Main Effects of Time, Text, and Treatment

		Free-Recall	Prompted-Recall
Time	Pretest	4.14	8.65
	Posttest	6.98	9.95
Text	Scrambled	4.48	8.80
	Unscrambled	6.64	9.81
Treatment	Control	5.05	
	Treatment	6.07	

Table 7. Prompted-Recall Summary Table

Source	df	SS	MS	F
Between Subjects	41	89.77		
Treatment	1	0	0	0
Subjects	40	89.77	2.24	
Within Subjects	126		271.75	
Time	1	70.72	70.72	51.62**
TimexTreatment	1	.73	.73	.53
TimexSubjects	40	54.80	1.37	
Text	1	43.00	43.00	29.86**
TextxTreatment	1	9.07	9.07	6.30*
TextxSubjects	40	57.68	1.44	
TimexText	1	8.16	8.16	12.75**
TimexTextxTreatment	1	2.13	2.13	3.33
TimexTextxSubjects	40	25.46	.64	
Total	167	361.52		

*p < .05

**P < .001

text and 9.57 on unscrambled text (see Table 8 and Figure 4).

Interaction for the means of time x text for the scrambled text on prompted-recall were 7.93 idea units for the pretest and 9.67 for the posttest. Unscrambled text means were 9.38 idea units for the pretest and 10.24 on the posttest (see Table 8 and Figure 5). Interaction among the independent variables for free-recall did not reach the F ratio necessary for statistical significance.

High Order Thinking/ Comprehending Skills

The mean percentage of treatment subjects giving Text Implicit (TI) responses to the short answer questions of the unscrambled stories improved 7.6% from pre- to posttest. The control group improved 8.1% from pre- to posttest (see Figure 6). For the scrambled stories the percentage of subjects giving TI responses decreased 16.1% in the treatment group and decreased 27% for the control group.

The percentage of subjects providing TI responses on each short answer question was computed for levels of treatment and text (see Tables 9 through 12). The only sizable growth in TI responses occurred with the treatment group on Question 2 ("Valuing--personal trait identification, interpretive") of unscrambled text, with an increase of 38.1% subjects from pre- to posttest (see Figure 7).

Table 8. Mean Values for the Prompted-Recall Interactions of Text x Treatment and Time x Text

		Scrambled	Unscrambled
	Treatment	8.57	10.05
Text x Treatment			
	Control	9.02	9.57
	Pretest	7.93	9.38
Time x Text			
	Posttest	9.67	10.24

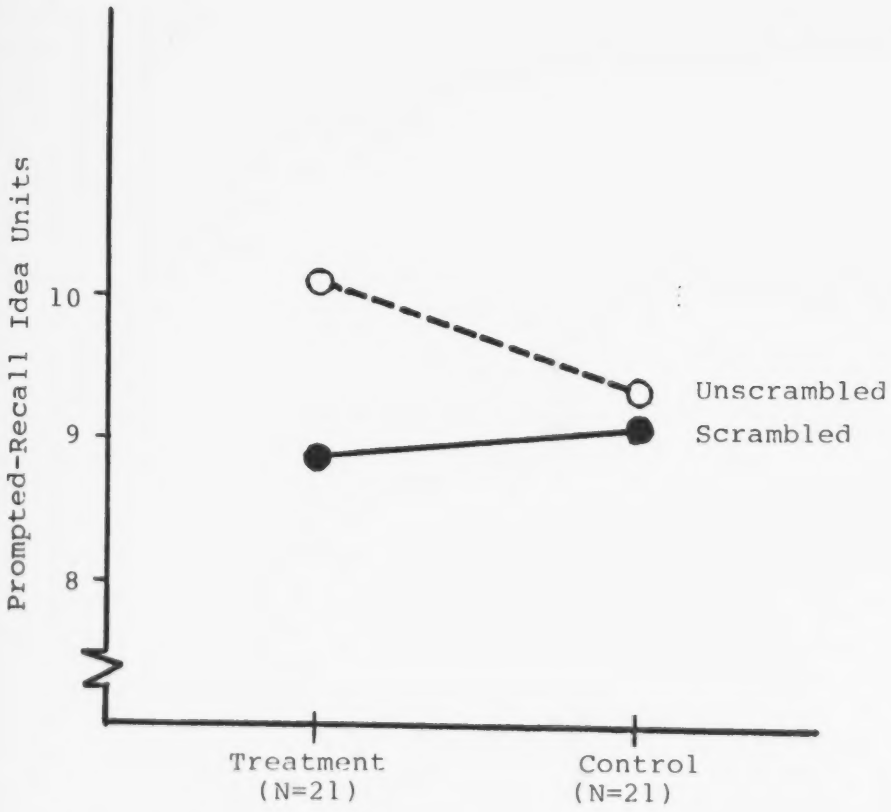


Figure 4. First-order interaction of text x treatment for mean of idea units on prompted-recall

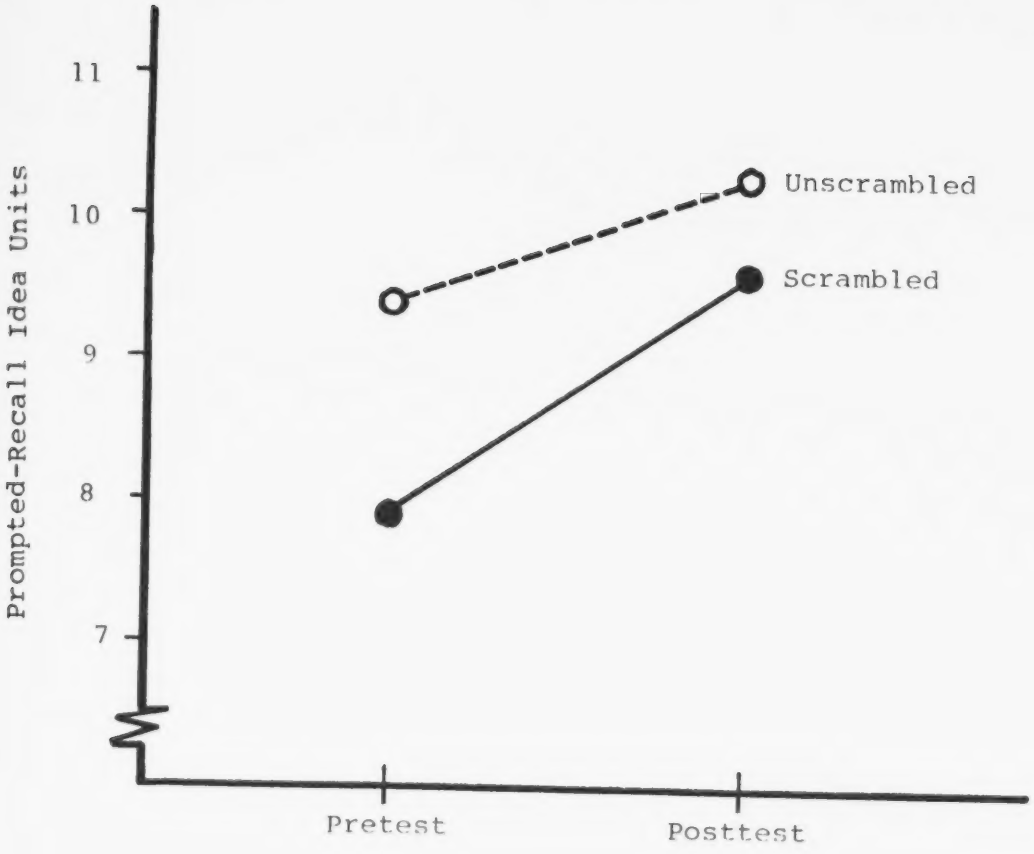


Figure 5. First-order interaction of time x text for mean of idea units on prompted-recall

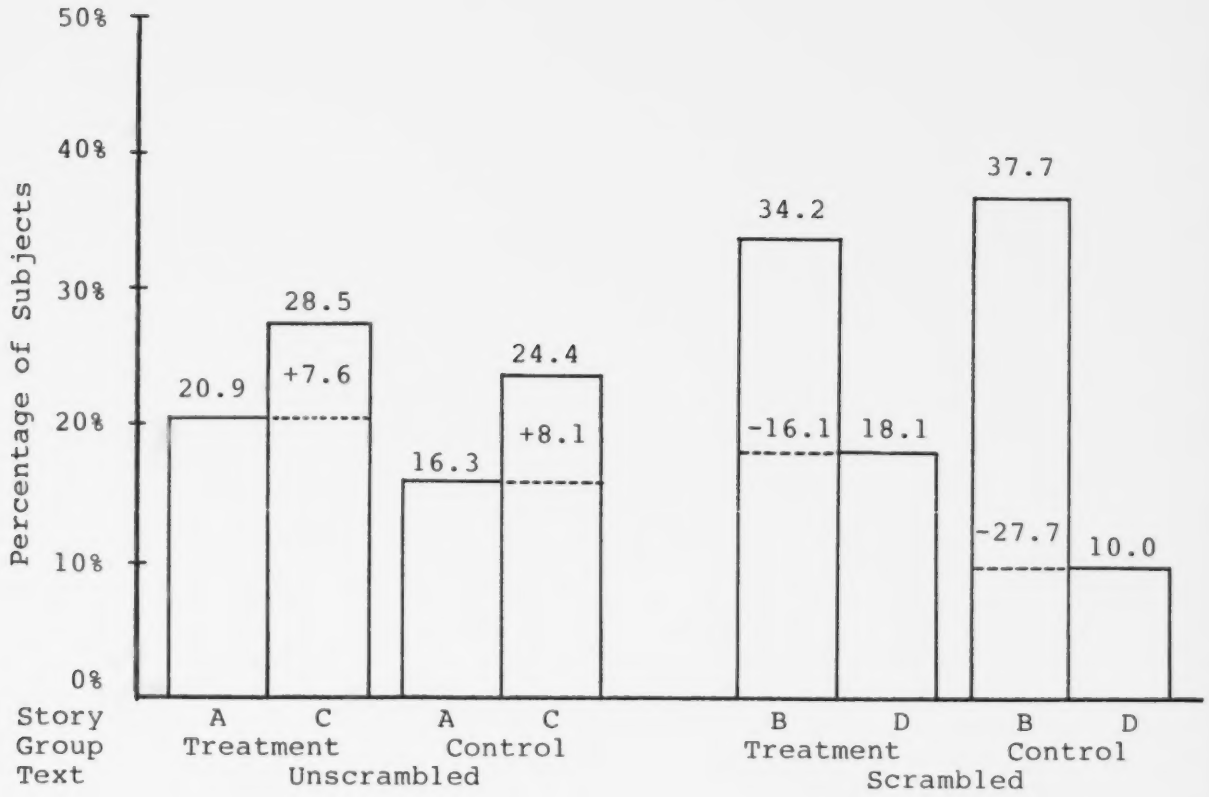


Figure 6. Mean percentage of subjects giving text implicit responses to short answer questions

Table 9. Frequency and Percentage of Ratings of Treatment Group on Short Answer Questions of Unscrambled Text

Rating	A n	A %	C n	C %	±%
Q1 (valuing--personal judgement, interpretive)					
	3	14.3	2	9.5	- 4.8
SI^1	2	9.5	2	9.5	0.0
SI^2	14	66.7	12	57.1	- 9.6
TI	2	9.5	5	23.8	+14.3
Q2 (valuing--character trait identification, interpretive)					
	1	4.8	0	0.0	- 4.8
SI^1	6	28.6	1	4.8	-23.8
SI^2	7	33.3	5	23.8	- 9.5
TI	7	33.3	15	71.4	+38.1
Q3 (valuing--author's motive identification, interpretive)					
	2	9.5	2	9.5	0.0
SI^1	15	71.4	3	14.3	-57.1
SI^2	3	14.3	14	66.7	+52.4
TI	1	4.8	2	9.5	+ 4.7
Q4 (predicting outcome, applicative)					
	0	0.0	0	0.0	0.0
SI^1	6	28.6	13	61.9	+33.3
SI^2	7	33.3	3	14.3	-19.0
TI	8	38.1	5	23.8	-14.3
Q5 (rpoblem solving, applicative)					
	2	9.5	0	0.0	- 9.5
SI^1	4	19.0	2	9.5	- 9.5
SI^2	11	52.4	16	76.2	+23.8
TI	4	19.0	3	14.3	- 4.7

Table 10. Frequency and Percentage of Ratings of Treatment Group on Short Answer Questions of Scrambled Text

Rating	B n	B %	D n	D %	+%
Q1 (valuing--personal judgement, interpretive)					
	3	14.3	0	0.0	-14.3
SI^1	11	52.4	11	52.4	0.0
SI^2	4	19.0	6	28.6	+ 9.6
TI	3	14.3	4	19.0	+ 4.7
Q2 (valuing--character trait identification, interpretive)					
	4	19.0	0	0.0	-19.0
SI^1	1	4.8	4	19.0	+14.2
SI^2	0	0.0	11	52.4	+52.4
TI	16	76.2	6	28.6	-47.6
Q3 (valuing--author's motive identification, interpretive)					
	3	14.3	1	4.8	- 9.5
SI^1	2	9.5	11	52.4	+42.9
SI^2	9	42.9	4	19.0	-23.9
TI	7	33.3	5	23.8	- 9.5
Q4 (predicting outcome, applicative)					
	2	9.5	0	0.0	- 9.5
SI^1	8	38.1	4	19.0	-19.1
SI^2	7	33.3	17	81.0	+47.7
TI	4	19.0	0	0.0	-19.0
Q5 (problem solving, applicative)					
	3	14.3	0	0.0	-14.3
SI^1	5	23.8	5	23.8	0.0
SI^2	7	33.3	12	57.1	+23.8
TI	6	28.6	4	19.0	- 9.6

Table 11. Frequency and Percentage of Ratings of Control Group on Short Answer Questions of Unscrambled Text

Rating	A n	A %	C n	C %	±%
Q1 (valuing--personal judgement, interpretive)					
	2	7.4	2	7.4	0.0
SI^1	6	22.2	4	14.8	- 7.4
SI^2	18	66.7	14	51.9	-14.8
TI	1	3.7	7	25.9	+22.2
Q2 (valuing--character trait identification, interpretive)					
	1	3.7	0	0.0	- 3.7
SI^1	5	18.5	5	18.5	0.0
SI^2	11	40.7	8	29.6	-11.1
TI	10	37.0	14	51.9	+14.9
Q3 (valuing--author's motive identification, interpretive)					
	2	7.4	4	14.8	+ 7.4
SI^1	22	81.5	1	3.7	-77.8
SI^2	2	7.4	19	70.4	+63.0
TI	1	3.7	3	11.1	+ 7.4
Q4 (predicting outcome, applicative)					
	0	0.0	0	0.0	0.0
SI^1	11	40.7	16	59.3	+18.6
SI^2	9	33.3	6	22.2	-11.1
TI	7	25.9	5	18.5	- 7.4
Q5 (problem solving, applicative)					
	1	3.7	5	18.5	+14.8
SI^1	8	29.6	4	14.8	-14.8
SI^2	15	55.6	14	51.9	- 3.7
TI	3	11.1	4	14.8	+ 3.7

Table 12. Frequency and Percentage of Ratings of Control Group on Short Answer Questions of Scrambled Text

Rating	B n	B %	D n	D %	±%
Q1 (valuing--personal judgement, interpretive)					
	1	3.7	1	3.7	0.0
SI^1	7	25.9	13	48.1	+22.2
SI^2	14	51.9	10	37.0	-14.9
TI	5	18.5	3	11.1	- 7.4
Q2 (valuing--character trait identification, interpretive)					
	2	7.4	1	3.7	- 3.7
SI^1	0	0.0	10	37.0	+37.0
SI^2	1	3.7	13	48.1	+44.4
TI	24	88.9	3	11.1	-77.8
Q3 (valuing--author's motive identification, interpretive)					
	2	7.4	2	7.4	0.0
SI^1	8	29.6	10	37.0	+ 7.4
SI^2	7	25.9	10	37.0	+11.1
TI	10	37.0	5	18.5	-18.5
Q4 (predicting outcome, applicative)					
	0	0.0	1	3.7	+ 3.7
SI^1	19	70.4	5	18.5	-51.9
SI^2	5	18.5	21	77.8	+59.3
TI	3	11.1	0	0.0	-11.1
Q5 (problem solving, applicative)					
	1	3.7	1	3.7	0.0
SI^1	14	51.9	10	37.0	-14.9
SI^2	3	11.1	14	51.9	+40.8
TI	9	33.3	2	7.4	-25.9

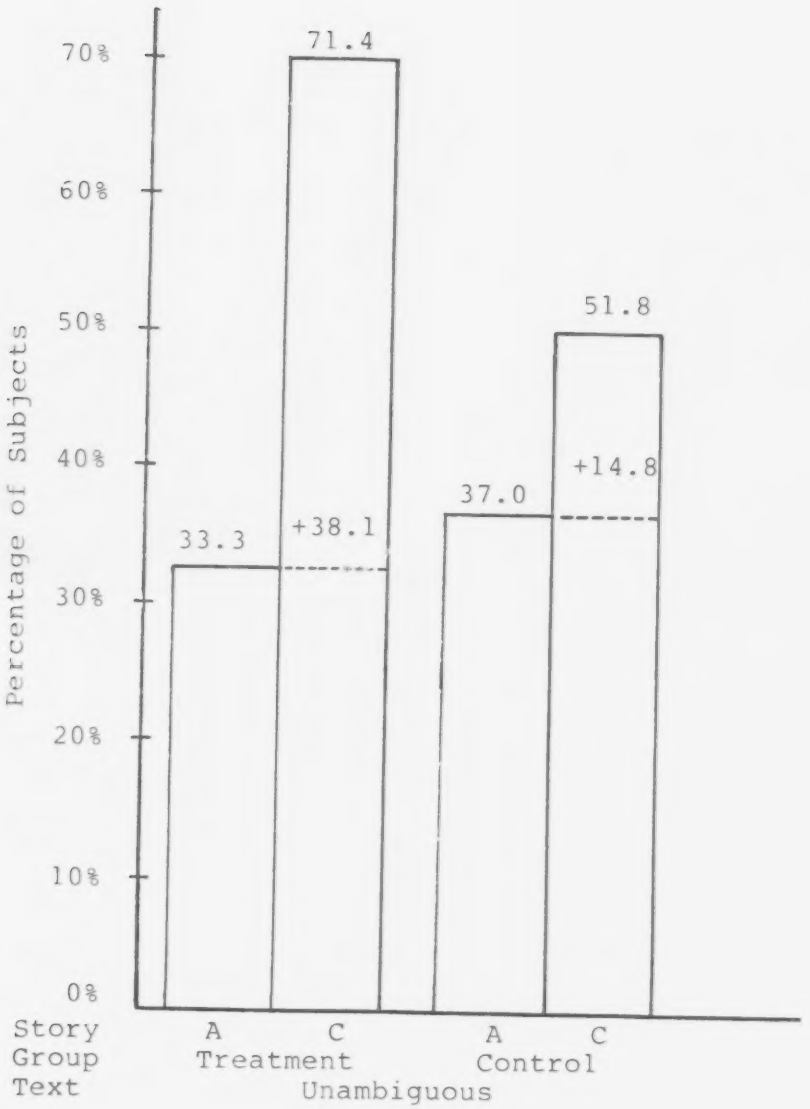


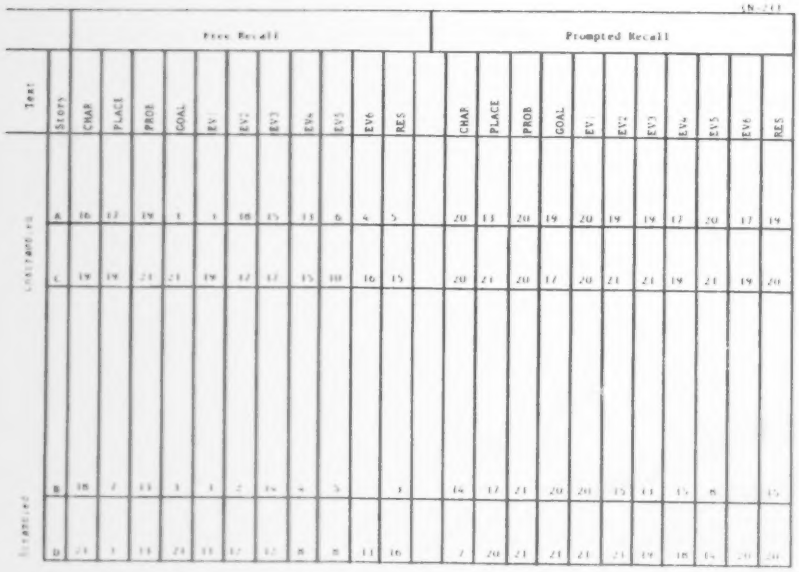
Figure 7. Percentage of subjects giving text implicit responses to Question 2 of unscrambled text (valuing--character trait identification, interpretive)

Further investigation compared the number of subjects recalling particular story elements correctly by treatment and text (see Figures 8 and 9). The frequency of subjects in the treatment group including the Goal and Resolution increased on free-recall for both unscrambled (Goal: 1 to 21, Resolution: 5 to 15) and scrambled (Goal: 3 to 21, Resolution: 3 to 16) text (where N = 21). The control group also showed an increase in Goal and Resolution story element identification for free-recall on unscrambled (Goal: 0 to 22, Resolution: 3 to 13) and scrambled (Goal: 6 to 22) text (where N = 27). The control group frequencies adjusted for the six outliers in idea unit recall are shown in Table 13.

Summary

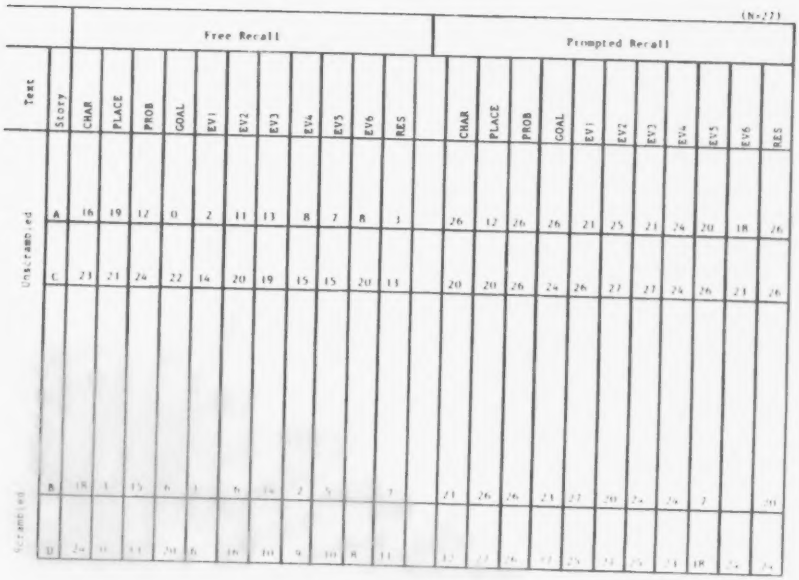
This chapter reviewed the results of the study. Findings of differences between subjects and within subjects by type of comprehension (free- and prompted-recall) were presented first. An analysis of variance (ANOVA) was used to test the statistical hypotheses of group differences for comprehension. Then a frequency of ratings was used for the high order thinking/comprehending skills. In addition, a frequency of subjects accurately indicating idea units was used for high order thinking/comprehending skills and transfer of learning. Various tables and figures

illustrated the results of the statistical analysis. A thorough discussion of these results follows.



	Text	Free Recall													Prompted Recall											
	Story	CHAR	PLACE	PROB	GOAL	EV	EV2	EV3	EV4	EV5	EV6	RES		CHAR	PLACE	PROB	GOAL	EV	EV2	EV3	EV4	EV5	EV6	RES
Unstandardized	A	16	17	19	1	1	16	15	11	6	4	5		20	13	20	19	20	19	19	17	20	17	19
	C	19	19	21	21	19	17	17	15	10	16	15		20	21	20	17	20	21	21	19	21	19	20
	B	18	7	13	3	1	2	14	8	5		3		14	17	21	20	20	15	11	15	8		15
Standardized	D	21	3	13	21	11	17	12	8	8	11	16		7	20	21	21	21	21	19	18	14	20	20

Figure 8. Number of treatment subjects recalling story elements correctly



Text	Story	Free Recall												Prompted Recall											
		CHAR	PLACE	PROB	GOAL	EV1	EV2	EV3	EV4	EV5	EV6	RES		CHAR	PLACE	PROB	GOAL	EV1	EV2	EV3	EV4	EV5	EV6	RES	
Unscrambled	A	16	19	12	0	2	11	13	8	7	8	3		26	12	26	26	21	25	23	24	20	18	26	
	C	23	23	24	22	14	20	19	15	15	20	13		20	20	26	24	26	27	27	24	26	23	26	
Scrambled	B	18	3	15	6	3	6	14	2	5		7		23	26	26	23	27	20	24	24	7		20	
	D	24	11	11	20	6	16	10	9	10	8	11		22	23	26	21	25	21	25	21	18	24	24	

Figure 9. Number of control subjects recalling story elements correctly

Table 13. Number of Control Subjects Recalling Goal and Resolution Story Elements Correctly With Six Outliers Removed (N = 21)

		Free-Recall		Prompted-Recall	
	Story	Goal	Resolution	Goal	Resolution
	A	0	3	20	20
Unscrambled					
	C	16	7	18	20
	B	6	7	17	14
Scrambled					
	D	14	7	21	18

Chapter 5

SUMMARY OF THE STUDY

Purpose and Problem Statement

The major goals of this study were to examine the effects of macrostruction using a story map upon the reading process and to determine how well and in what way this activity transfers to subsequent texts to improve comprehension. A review of the literature indicated mixed results of the effect of macrostruction on the amount and kind of comprehension, with those showing positive gains outnumbering those showing no gains. Furthermore, evidence exists in the areas of schema theory and transfer of learning to suggest that macrostruction may affect the higher order thinking/comprehending skills. It was posited, therefore, that narrative macrostruction using a story map that develops awareness and use of story structure during the reading comprehension process, after sufficient practice (defined in the study as eight trials during 4 weeks) improves free- and prompted-recall of scrambled and unscrambled stories, increases the number of Text Implicit (TI) responses to interpretive and applicative questions, and transfers to subsequent reading.

Research Hypotheses Results

To test the research hypotheses underlying this study, the two student groups took part in an experimental procedure. One group was given a narrative macrostruction treatment using basal stories; the second group participated in a literature reading program using basal stories. Before and after the 4-week treatment period each group read the same scrambled and unscrambled basal story followed by text-specific comprehension questions. This presentation method allowed the testing of the following research hypotheses.

The following research hypotheses address the question raised about the effect of the macrostruction training activities in the study upon pre- and posttest measures of free- and prompted-recall on scrambled and unscrambled stories.

Free-Recall Comprehension

Ho(1a). The population mean scores of the free-recall comprehension are equal to the population mean scores for the main effects of time, text, and treatment, as measured by a free written protocol.

H1(1a). The population mean scores of the free-recall comprehension are greater than the population mean scores for the main effects of time, text, and treatment, as measured by a free written protocol.

Conclusion. H0(1a) is rejected for the main effects of time, text, and treatment. The mean free-recall comprehension scores were significantly higher at the $p < .001$ (time and text) and $p < .05$ (treatment) than the mean comprehension scores for the population (see Table 5, p. 61).

Elaboration of conclusion. Subjects improved their free-recall (number of idea units) means as a result of macrostruction from pre- (4.14) to posttest (6.98), scrambled (4.48) versus unscrambled (6.64), and control (5.05) versus treatment (6.07) (see Table 6, p. 63). These figures indicate that in terms of the main effects, free-recall was influenced.

H0(1b). The population mean scores of the free-recall comprehension are equal to the population mean scores for the interactions of time x text, time x treatment, text x treatment, and time x text x treatment, as measured by a free written protocol.

H1(1b). The population mean scores of the free-recall comprehension are greater than the population mean scores for the interactions of time x text, time x treatment, text x treatment, and time x text x treatment, as measured by a free written protocol.

Conclusion. H0(1b) is not rejected for all the possible interactions of time, text, and treatment (see Table 5, p. 61).

Elaboration of conclusion. None of the free-recall interactions reached a point of being statistically significant.

Prompted-Recall
Comprehension

H0(2a). The population mean scores of the prompted-recall comprehension are equal to the mean scores of the main effects of time, text, and treatment, as measured by text-specific questions.

H1(2a). The population mean scores of the prompted-recall comprehension are greater than the mean scores of the main effects of time, text, and treatment, as measured by text-specific questions.

Conclusion. H0(2a) is rejected for the main effects of time and text. The mean prompted-recall comprehension scores were significantly higher at the $p < .001$ (time, text) (see Table 7, p. 64) level. H0(1b) is not rejected for the main effect of treatment.

Elaboration of conclusion. Subjects improved their prompted-recall (number of idea units) means as a result

of the macrostruction from pre- (8.65) to posttest (9.95) and scrambled (8.80) versus unscrambled (9.81) (see Table 6, p. 63). These figures indicate that prompted-recall was influenced in terms of the main effects of time and text.

H0(2b). The population mean scores of the prompted-recall comprehension are equal to the mean scores for the interactions of time x text, time x treatment, text x treatment, and time x text x treatment, as measured by text-specific questions.

H1(2b). The population mean scores of the prompted-recall comprehension are greater than the mean scores for the interactions of time x text, time x treatment, text x treatment, and time x text x treatment, as measured by text-specific questions.

Conclusion. H0(2b) is rejected for the interactions of text x treatment and time x text. The mean prompted-recall comprehension scores were significantly higher at the $p < .001$ (time x text) and $p < .05$ (text x treatment) (see Table 7). H0(2b) is not rejected for the two other possible interactions.

Elaboration of conclusion. The interaction of text x treatment idea unit means for the treatment group were 8.57 (scrambled text) and 10.05 (unscrambled). Control

idea unit means were 9.02 (scrambled) and 9.57 (unscrambled) (see Table 8, p. 66). Interaction for the idea unit means of time x text for scrambled text were 7.93 (pretest) and 10.24 (posttest) (see Table 8). These figures indicate that prompted-recall was influenced in terms of the interactions of text x treatment and time x text.

High Order Thinking/
Comprehending Skills

Simple descriptive frequencies of subjects providing each type of response (i.e., incorrect, S11, S12, TI) indicate no overall increase in TI responses between the treatment and control groups (see Figure 6, p. 69). However, examination of each question indicates a sizable growth (+38.1%) in the number of treatment subjects providing TI responses to Question 2 ("Valuing--character trait identification, interpretive") from pre- to posttest as compared to the control group (see Table 9, p. 70).

Further investigation compared the number of subjects recalling particular story elements correctly by treatment and text (see Figures 8 and 9, pp. 76, 77). The frequency of subjects in the treatment group including the Goal and Resolution increased on free-recall for both unscrambled (Goal: 1 to 11, Resolution: 5 to 15) and scrambled (Goal: 3 to 21, Resolution: 3 to 16) text (where N = 21). The control group also showed increase in Goal and Resolution story element identification for free-recall on unscrambled

(Goal: 0 to 22, Resolution: 3 to 13) and scrambled (Goal: 6 to 22) text (where N = 27). These figures indicate that free-recall fo the Goal and Resolution story was influenced by the treatment.

Elaboration and Discussion of Results

Further elaboration and discussion of the study results are discussed below for each hypothesis showing statistical significance.

Free-Recall Comprehension

Time. The difference of 2.84 mean idea units (see Table 6, p. 63) freely recalled between the pre- and posttest shows that the treatment did produce growth in comprehension. This growth is especially meaningful since the subjects in this study were average and above readers. Previous studies have only shown improvement in the free-recall of poor readers, with little or no improvement resulting from the macrostruction treatment on better readers.

The growth of almost 3 idea units is also very meaningful because it demonstrates that the macrosturction transfered from the treatment exercises to a subsequent reading task. Even better readers, as in this case, can profit by freely recalling more higher-level propositions (i.e., story structure elements: Setting, Problem, Goal, Events, etc.).

By reviewing Figures 8 and 9 (pp. 76, 77), it appears that the growth in story structure elements recalled was in the areas of the Goal and Resolution. This observation is very interesting, not only because these story elements are more difficult to identify, but because they both involve the process of making Text Implicit (TI) inferences of character traits and motives. This would also explain why Question 2 ("Valuing--character trait identification, interpretive") of the short answer high order thinking/ comprehending questions showed sizable growth. The macrostruction with the story map helps readers see the relationships between the story parts and use those relationships when recalling and thinking through responses to interpretive questions.

Text. The difference of 2.16 mean idea units (see Table 6, p. 63) freely recalled between the scrambled and unscrambled texts shows that a more "well-formed" narrative text allows for better recall of story structure elements. This is consistent with the story schema research which suggests that a better match between the story schema in the mind of the reader and the underlying structure in the text will result in better comprehension.

Treatment. The difference of 1.02 mean idea units (see Table 6) freely recalled between the control and treatment groups shows that macrostruction using a story map improves the comprehension of narrative text. Although

a difference of 1 idea unit may not seem significant, it does represent a meaningful improvement when viewed form the standpoint that Goal and Resolution are the story structure elements where the growth is taking place (see Figures 8 and 9, pp. 76, 77). As discussed previously, the ability to identify and recall the Goal involves making a Text Implicit inference of a character's traits and motives, which is a higher level thinking process. This finding bears out the fact that the macrostruction treatment using the story map gives readers the memory categories and thinking processes to provide such responses.

The growth of 1 mean idea unit may also not seem significant, but for the fact that the subjects in this study were already very good readers. Any measurable growth, especially of this type (the Goal story element), is meaningful.

Prompted-Recall Comprehension

Time. The importance of the growth with respect to the difference between pre- and posttest mean idea unit scores has already been discussed under the free-recall heading. In the case of prompted-recall comprehension, the growth between pre- and posttest was only 1.30 (see Table 6, p. 63). The apparently small growth may be explained by the presence of a ceiling effect. The

posttest mean of 9.95 is only 1 idea unit from the top score possible of 11. Taking this factor into account, it is notable that an improvement of even 1 mean idea unit occurred. The power of the macrostruction and story map and the sequence of questioning develops a strong heuristic that readers can use in comprehension, even with scrambled stories. A review of Figures 8 and 9 (pp. 76, 77) shows no patterns as to the type of story structure element recalled more as a result of the treatment between the pre- and post-test.

Text. The difference of mean idea units recalled between scrambled and unscrambled text is 1.01 (see Table 6, p. 63). This small difference is likely the result of the sequence of the questioning for the prompted-recall. Researchers have suggested that asking questions in the same order as the story line and of high-level proposition information (i.e., story grammar elements) improves comprehension of narrative text. This finding of the study supports that speculation. And furthermore, it suggests that macrostruction can help the comprehension of better readers, also, contrary to the findings of Dreher and Singer (1980) and Sebesta, Calder, and Cleland (1982).

Text x treatment. The findings here (see Table 8, p. 66) further support the power of macrostruction with the story map and the line of questioning on the recall

ability of better readers. The significance of this interaction lies in the fact that the treatment has a more dramatic effect upon the comprehension of unscrambled text than scrambled text (see Figure 4, p. 67). This "goodness of fit" makes sense, since the story schema developed in the mind of the reader as a result of the macrostruction would correspond to the underlying structure (story grammar) of the text. This could create a ceiling effect on the unscrambled text that may limit the results that show the real power of macrostruction and the line of questioning on the comprehension of narrative text in good readers. Also, had the sample for this study been larger, this increase may have been magnified even more.

Time x text. The significant results found here (see Tables 7 and 8, pp. 64, 66) translate into the fact that the line of questioning used shows marked improvement on both scrambled and unscrambled text. The difference is especially great for the scrambled text (see Figure 5, p. 68). This means that the questioning process of following the story line and asking only for story structure element information is especially powerful when the underlying structure of a text is unclear or incomplete. The growth for the unscrambled text may have been greater, but a ceiling effect again limits the amount of prompted-recall

comprehension improvement possible. These results, and those of text x treatment, further point out that macrostruction transfers to a subsequent reading task. Implied by this is that readers internalize the structures explicitly discussed during instruction and then use them when recalling novel text.

High Order Thinking/
Comprehending Skills

Simple descriptive frequencies of subjects show that the ability to provide a Text Implicit (TI) response to questions regarding character trait identification (interpretive) greatly improves as a result of the macrostruction (see Tables 9-12, pp. 70-73). This finding is further confirmed by the frequency of subjects recalling particular story structure elements in Figures 8 and 9 (pp. 76, 77). The literature review suggested the likelihood of an increase in TI responses occurring as a result of this type of comprehension instruction, and was shown to be true by this study design.

Possible reasons for the increase in TI responses to interpretive character trait questions are (a) the process of using the story map focused on the often-implied relationships (causal, superordinate, subordinate, etc.) between story structure elements, (b) the process of completing a story map required the reader to get information out of the story text that was Text Explicit

(information explicitly stated in the story text), Text Implicit (information implied in the text, not directly stated), and Script Implicit (information that the reader brings to the text, background knowledge), (c) the process of using the story map allowed deeper encoding of the story structure elements and their relationships than irrelevant textual information, (d) the story schema of the reader had been strengthened and therefore retrieval and use of stored information and relationships was efficient, (e) the process of using the story map transfered to subsequent thinking and reading because of the strengthened story schema that allowed them to generalize the cognitive processes elsewhere, and (f) the process of using the story map allowed the reader to better relate the story text to what they already knew, both experientially and structurally. This final reason parallels Ruddell and Speaker's (1985) comprehension model in which they state that the procedural knowledge (organizational and process knowledge) and the declarative knowledge (world knowledge and background experience) interact during the comprehension process. That is, the story map used in macrostruction (world knowledge about the underlying structure of stories) became declarative knowledge, and the internalized macrostruction process (formulating the story elements from the text, perceiving causal and hierarchical relationships among story elements, and

questioning along the story line) became procedural knowledge.

Summary of Results

The results discussed above show that directly teaching the text structure of narrative text and using a line of questioning that follows the story line had a strong effect on the ability of average and above average sixth-grade readers to comprehend stories under both free and prompted conditions. Furthermore, the evidence suggests that macrostruction further strengthened the story schema of the subjects and that it transfered to a subsequent story. Descriptive data indicates that use of the story map in instruction has an effect on the thinking and comprehending ability to provide Text Implicit (TI) responses to interpretive questions asking about character traits and motives. These results run counter to the results of earlier studies which found that direct instruction in story grammar had an insignificant effect on better readers. The effects of macrostruction can be explained in terms of Ruddell and Speaker's (1985) comprehension model as building declarative knowledge (knowledge about the underlying structure of stories) and procedural knowledge (knowledge about how to determine the story structure elements and construct their relationships for understanding, recall, and thinking). The synergistic effect of these

two types of knowledge in macrostruction is powerful, even with good readers.

Implications for Research

The results of the study open a number of unanswered questions for further research.

1. How long-lasting are the effects of macrostruction on learners' ability to recall story elements and provide inferential responses to specific types of interpretive and applicative questions? Replicate this study using delayed posttests to measure how long-lasting the effects are on comprehension. An additional replication might also include a longer treatment period (such as 9 weeks), followed by delayed posttesting.

2. Would macrostruction significantly improve comprehension ability at other grade levels? Replicate this study with low- and high-achieving readers at other grade levels.

3. Is macrostruction effective under all levels of difficulty of text? Design a study using text of varying difficulties on readers from different chronological and developmental levels.

4. Is the effect of macrostruction developmental in nature, producing varying effects at the various chronological, cognitive, and ability levels of learners? Design a study where the developmental nature of text structures and readers can be examined.

5. Would various types of macrostruction using different forms and strategies of story mapping produce similar results on comprehension? Design a study where several forms of the story map (e.g., Pearson's highly structured story map, Applebee's semistructured story map, and Ruddell's free-form story map) are used in macrostruction and measure the effects each has on comprehension.

6. What effect would the use of the story map for writing have upon the reading comprehension of learners? Design a study where the story map is used in the writing process for the construction of short narrative stories and measure the effects on the reconstructive process of reading comprehension.

7. What similarities are there between perceiving the macrostructure of narrative and expository text? Design a study to identify similar comprehension processes and instructional procedures for both types of text.

Implications for Instruction

The results of the study indicate that macrostruction has an effect on the comprehension of average and above average readers and that it may have an even greater effect on the ability to perform some types of high order thinking/comprehending skills. Based on these results, the follow-in recommendations are made.

1. The use of macrostruction can be used to further develop the comprehension of average and above average readers in the sixth grade. Use the story map (see Figure 2, p. 45) as it was used in the study for comprehension instruction of readers at all levels in the class.

2. It appears that macrostruction may be useful in teaching learners to make inferences regarding the motive(s) (Goal) of Characters in stories and recognizing the attainment or nonattainment of this desire. Pay specific attention to the Goal in the map during instruction and discuss how to think through and arrive at this story structure element.

3. The use of the story map does provide for a logical and coherent format for questioning and discussion following the reading of a story. Ask questions in the same sequence as the story line initially after reading.

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APPENDICES

APPENDIX A

PRE- AND POST-MEASURES

Story, A

Never Trust a Goat

by R. L. Prost

It was Saturday so my best friend Maria and I decided to go to the zoo. We were just hanging around feeding popcorn and marshmallows to the farm animals.

"Let's go," said Maria. "Here comes a goat."

"Here goat! Here goat!" I hollered, holding out some popcorn. I sort of like goats. Or at least I *did*.

The goat trotted over, put his front feet up on the fence, and stared me in the eye.

"Have some popcorn," I said sweetly.

Then the goat reached over the fence and chomped his teeth right on the collar of my blouse. He wouldn't let go.

I started screaming. "Get him off, get him off!"

Maria started pelting the goat with little sticks and stones.

"Bad goat, naughty goat!" she said, which only got the goat's goat, and he started yanking at my blouse, nearly tearing it off.

"Hold it!" I screamed. "Leave him alone!"

Maria stopped. The goat quieted down, and I rearranged my blouse the best I could.

"I'll go get the lion tamer or something," Maria said. She ran off, waving her arms in the air.

So there we were, the goat and I, hanging together on the fence. I tried to reason with him. "Listen, goat, let go and I promise I'll come back tomorrow with a bag of cans."

But he wouldn't pay attention. He kept sucking in more of my collar and making strange gurgling sounds.

A crowd started to gather. One little boy tapped me on the leg with his popsicle. "Why is the moose eating your shirt, lady?" he asked.

"It's not a moose, it's a goat," I smiled. "Go pet a cow, kid." I gave him a shove.

I was getting a kink in my neck, and the goat's hind legs were beginning to wobble. I had the feeling that he was about ready to get down off the fence and take my blouse with him. I wrapped my arms around his neck to hold him up.

The crowd was growing. A vendor came over and began selling balloons. "Hiya, hiya! Come see the little lady feed the goat!"

A little girl with a broken arm came up and asked me to sign her cast. So I put, "Best of luck, Juanita and the goat." She really liked that.

One of her friends got all excited and accidentally rammed her ice cream cone into my elbow. "Waaaaall" she screamed. "You broke my ice cream cone!" She started jumping up and down. She began kicking the fence I was hanging onto with everything I had.

"Somebody get that kid out of here before I get jumped to death," I growled through my teeth.

I was squeezing the goat so tight his eyes were bulging.

"What are you doing to that goat?" a woman said.

"She's trying to strangle him."

"These know-it-all kids ruin the zoo for everybody."

"Teenage vandals."

The crowd was getting ugly. I was afraid they were going to hang me. Where in the world was Maria with the help?

"Can I help you, lady?" said a little boy about seven years old.

"Oh, yes," I sighed. "Please get a guard or police officer for me."

"What'll you give me?"

"How about a quarter?"

He held my purse while I rummaged around for a quarter. "I can't seem to find a quarter," I said.

"I'll have my mom take a look," he said. He grabbed my purse and ran.

"Stop him!" I shouted. The goat started yanking and gurgling. My top button popped.

I whispered, "Will someone please get the police?"

"They'll want us to act as witnesses," a middle-aged man said.

"I didn't see a thing," said another person.

Everybody scattered. The balloon man came over and nudged me in the arm. "Nice going, stupid. You chased my customers away."

So there we were, the goat and I, hanging on the fence together.

"Hey, Butch, over here! Some girl hugging a goat!"

Slowly another crowd gathered. A large person munching a hot dog came over: "Whatcha kissing that goat for?"

"I happen to like goats," I sneered.

"You know, toots, I had an uncle once who got hoof and mouth disease from a goat licking his chin."

My feet began to ache and my mouth got suddenly dry.

Finally I could hear Maria making her way through the crowd. "This way, over this way." She was pushing and pulling a sad old man in a maintenance uniform. He was dragging a shovel.

"Where have you been?" I demanded.

"Nobody would come and help," she said. "I told them you were being eaten by a goat and they wouldn't listen."

"And I can't help you either," said the old man. "My job is to shovel out the elephant cage. What you want is the goat person." And he started to leave.

"Where do we find the goat person?" I called after him. But he just kept walking, shaking his head.

"I'm going to get the fire department," said Maria. And she ran off in the other direction.

The crowd was bigger now than ever before. The balloon man came back and brought a buddy selling hot dogs.

"Get your red hots!"

"Hiya, hiya! See the little lady dance with the goat!"

The goat was getting heavy. He had his head resting on my shoulder. I looked down. He was asleep.

I heard a familiar voice say, "Can I buy a hot dog, Ma?"

I turned around. "Is that your kid?" I asked.

"That's right," said the lady.

"He stole my purse!"

"My kid never stole anything! Here's your purse. He just brought it to me to get the quarter you owed him!" She jostled a stroller against my leg. Two of the kids in it started beating me with their fists, while the mother tucked my purse back under my arm. I couldn't move my arm because I'd drop the purse.

The goat woke up all wide eyed, sucking fiercely on my collar.

"Stop that at once!" said a man with his hand raised like a traffic officer.

"Thank you, sir," said I, gratefully.

"That goat may have rabies," the man said.

Everybody gasped and backed up a giant step.

"Come on, kids, let's go see the gorilla," said a disappointed voice in the crowd. "That goat ain't gonna chew her up."

"Let's go home, Harry. She's not doing anything," somebody else said.

"What's she supposed to do?" a child asked.

"I thought she was going to dance with a goat."

The crowd started to thin out. The goat was sleeping again. I heard thunder. It was getting dark.

A little grandmother walked up and whispered in my ear. "I know what that goat wants, dear. He wants the bleach in your blouse."

"Maybe you're right," I said. "Does anybody have any bleach?" I shouted to the dwindling crowd.

"Hey, she's gonna wash the goat."

But nobody was interested. They all left.

So here we are, me and the goat hanging on to the fence. It's starting to rain.

Will somebody please call my parents?

From R. L. Prost, 1978, The Widening Path, Level 19, Pathfinder Reading Program (pp. 41-46). Boston: Allyn and Bacon. Copyright 1978 by Allyn and Bacon. Reprinted by permission.

write everything you can remember about the story. Do not look back.

NEVER TRUST A GOAT

MULTIPLE-CHOICE QUESTIONS

1. Where did the girls decide to go on Saturday?
   a. Park
   b. Zoo
   c. Farm
   d. Not Given

2. What is the name of the main character in the story?
   a. Maria
   b. Butch
   c. Juanita
   d. Not Given

3. What is her problem in the story?
   a. The crowd makes fun of her
   b. A little girl wipes her ice cream cone on her elbow
   c. The goat won't let go of her collar
   d. No problem

4. What does she need to do to solve her problem?
   a. Find someone to make the goat let go
   b. Laugh back at the crowd
   c. Clean the ice cream off her elbow
   d. Nothing

5. What were the first things the girls tried to solve the problem?
   a. Yell and throw things at the crowd
   b. Yell and throw things at the goat
   c. Throw ice cream at the crowd
   d. Nothing

6. When this does not work, what does Maria do?
   a. Punch the goat
   b. Gather people around
   c. Go for help
   d. Nothing

7. What does the crowd do to help her?
   a. Call the goat names
   d. Send for the police
   c. Give the goat popcorn
   d. Nothing

8. Why does the maintenance man say he can not help?
   a. It is not his job
   b. He is too tired
   c. There is nothing he can do
   d. No reason

9. Where does Maria go for help next?
   a. Fire department
   b. Her parents
   c. Police
   d. Nowhere

10. What does the second crowd of people do to help her?
   a. Whisper in her ear
   b. Send someone for help
   c. Call the firemen
   d. Nothing

11. How is her problem solved?
   a. Someone cleans the ice cream off her elbow
   b. The goat lets go of her collar
   c. The crowd stops laughing
   d. It is not solved

SHORT ANSWER QUESTIONS

1. Does the story seem believable to you? _____ Why or why not? _____

_____

2. How dependable was Maria? _____

_____

3. Why do you think the author purposely ended the story without the problem being solved?

_____

_____

4. What could have been another ending for the story? _____

_____

5. If you had been Maria, how would you have found help? _____

_____

6. Have you ever been to a zoo? _____

7. Have you ever seen a goat in real life or on TV? _____

Story B

Nana Miriam

by Hans Baumann
translated by Stella Humphries

Her father instructed her in all kinds of things. He went with her to the sandbank and said, "Watch the fish!" And he told her the names of all the various kinds. Everything there is to know about fish he taught her. Then he asked her, "What kind is that one swimming here, and the other one over there?"

"This is a so-and-so," replied Nana Miriam. "And that is a such-and-such."

"Male or female?" asked Fara Maka.

"I don't know," said Nana Miriam.

"This one is a female, and so is the other one," explained Fara Maka. "But the third one over there is a male." And each time he pointed to a different fish.

That was how Nana Miriam came to learn so much. And in addition she had magic powers within her, which no one suspected. And because her father also taught her many magic spells, she grew stronger than anyone else in the Land of the Songai.

Again Nana Miriam sprinkled her magic powder. At once the river dried up and the water changed back into a hippopotamus. It grew more and more afraid and when Fara Maka came up to see what was happening, the monster charged him blindly. Nana Miriam ran after it, and when it was only ten bounds away from her father, she seized it by its left hind foot and flung it across the Niger. As it crashed against the opposite bank, its skull was split and it was dead. Then Fara Maka, who had seen the mighty throw, exclaimed, "What a daughter I have!"

Fara Maka returned home furious, wondering who he could summon to help him. Now there was a man of the Tomma tribe who was a great hunter. His name was Kara-Digi-Mao-Fosi-Fasi, and Fara Maka asked him if he would hunt the hippopotamus with his one hundred and twenty dogs. "That I will," said Kara-Digi-Mao-Fosi-Fasi.

So Fara Maka invited him and his one hundred and twenty dogs to a great banquet. Before every dog, which had an iron chain around its neck, was placed a small mound of rice and meat. For the hunter, however, there was a huge mound of rice. None of the dogs left a single grain of rice uneaten, and neither did Kara-Digi-Mao-Fosi-Fasi. Well fortified, they set out for the place where the monster lived.

"Right!" shouted the hippopotamus, and a wall of iron sprang up making a ring around the monster. But Nana Miriam plucked a magic hammer from the air, and shattered the iron wall into fragments.

As soon as the dogs picked up the scent, Kara-Digi-Mao-Fosi-Fasi unchained the first one. The chain rattled as the dog leaped forward towards its quarry. One chain rattled after the other, as dog after dog sprang forward to attack the hippopotamus. But the hippopotamus took them on one by one, and it gobbled them all up. The great hunter Kara-Digi-Mao-Fosi-Fasi took to his heels in terror. The hippopatamus charged into a rice field and ate that too.

Beside the great river, the Niger, there lived a monster that took the form of a hippopotamus. This monster was insatiable. It broke into the rice fields and devoured the crops, bringing famine to the Songai people. No one could tackle this hippopotamus, because it could change its shape. So the hunters had all their trouble for nothing and they returned to their villages in helpless despair. Times were so bad that many died of hunger.

When Fara Maka heard from the great hunter what had happened, he sat down in the shadow of a large tree and hung his head.

"Haven't you been able to kill the hippopotamus?" Nana Miriam asked him.

"No," said Fara Maka.

"And Kara-Digi-Mao-Fosi-Fasi couldn't drive it away either?"

"No."

"So there is no one who can get the better of it?"

"No," said Fara Maka.

"Then I'll not delay any longer," said Nana Miriam. "I'll go to its haunts and see what I can see."

"Yes, do," said her father.

"Good morning," replied Nana Miriam.

"I know why you have come," said the hippopotamus. "You want to kill me. But no one can do that. Your father tried, and he lost all his lances. The great hunter Kara-Digi-Mao-Fosi-Fasi tried, and all his dogs paid with their lives for his presumption. And you are only a girl."

"We'll soon see," answered Nana Miriam. "Prepare to fight with me. Only one of us will be left to tell the tale."

Nana Miriam walked along the banks of the Niger, and she soon found the hippopotamus eating its way through a rice field. As soon as it saw the girl it stopped eating, raised its head and greeted her.

"Right you are!" shouted the hippopotamus and with its breath it set the rice field afire. There it stood in a ring of flame through which no mortal could pass.

One day, Fara Maka picked up all his lances and set out to kill the monster. When he saw it, he recoiled in fear, for huge pots of fire were hung around the animal's neck. Fara Maka hurled lance after lance, but each one was swallowed by the flames. The hippopotamus monster looked at Fara Maka with scorn. Then it turned its back on him and trotted away.

But Nana Miriam threw magic powder into the fire, and the flames turned to water.

Now for the first time the hippopotamus felt afraid, and it turned itself into a river that flowed into the Niger.

Very soon, all of the people heard what had happened, and the Dialli, the minstrel folk, sang the song of Nana Miriam's adventure with the hippopotamus, which used to devastate the rice fields. And in the years that followed, no one in the Land of the Songai starved any more.

Fara Maka was a man of the Songai people, who lived by the River Niger. He was taller than the other men and he was also stronger. Only he was very ugly. However, no one thought that important, because Fara Maka had a daughter who was very beautiful. Her name was Nana Miriam and she too was tall and strong.

From H. Baumann, 1982, Majesty and Mystery, Level 17, Pathfinder Reading Program (S. Humphries, Trans.) (pp. 210-216). Boston: Allyn and Bacon. Copyright 1974 by Random House. Reprinted by permission.

write everything you can remember about the story. Do not look back.

NANA MIRIAN

MULTIPLE CHOICE QUESTIONS

1. where does the story take place?

a. In Dialli Land
b. In the River Niger
c. Along the River Niger
d. Not Given

2. Who are the main characters in the story?

a. Kara-Digi-Mao-Fosi-Fasi
b. Fara Maka and Nana Miriam
c. Tomma and Songai Tribes
d. Not Given

3. What is their problem in the story?

a. The hippo ate all the crops so people are starving
b. The hippo turns himself into a river
c. Nana Miriam is too smart
d. No problem

4. What do they need to do to solve their problem?

a. Tell Nana Miriam not to be so smart
b. Kill the hippo so they can grow food to eat
c. Change the river back into a hippo
d. Nothing

5. What was the first thing tried to solve the problem?

a. Hunters tried to tackle the hippo
b. The hippo gets mad at the Songai
c. Nana Miriam learned to name fish
d. Nothing

6. When this does not work, what does Fara Maka do?

a. Asks Nana Miriam for help
b. Tries to calm the hippo down
c. Throws lances (spears) at the hippo
d. Nothing

7. What did he do when that did not work?

a. Asked the Songai people to move
b. Asked Kara-Digi-Mao-Fosi-Fasi to kill the monster hippo
c. Gave up
d. Nothing

8. When Fara Maka felt like giving up, who came along and said they would help?

a. Hippopotamus
b. Nana Miriam
c. Dialli
d. No one

9. What does this person do?

a. Put out the fire and break the iron wall around the hippo
b. Change the hippo into a river with magical powder
c. Run at the hippo in anger
d. Nothing

10. How is the problem finally solved?

a. The Dialli write a song about Nana Miriana
b. Nana Miriam loses her magical power
c. The hippo is thrown across the river where it dies, and no one starves again
d. It is not solved

SHORT ANSWER QUESTIONS

1. Why do you think Nana Miriam waited so long to say that she would try to kill the hippopotamus?

_____

_____

2. Why were Fara Maka and Nana Mirian the best people to hunt the monster hippo?

_____

_____

3. Why do you think the author had Nana Miriam kill the hippopotamus instead of someone else?

_____

_____

4. What could have been another ending for the story? _____

_____

5. If you had been Kara-Digi-Mac-Fosi-Fasi, how might you have made your attack more effective?

_____

_____

6. Have you ever read an African folktale before? _____

7. Have you ever seen a hippopotamus in real life or on TV? _____

Story C

Something Fishy

by James Holding, Jr.

When Alicia Stevens got home from work one Thursday, she found her daughter standing in the front yard staring at their mobile home.

"What's the matter, Laura?" she asked. "Lose another ball on the roof?"

"Hi, Mom," said Laura not even turning her head. "No, I was just trying to be sure that this is where I live."

"What?" asked Mrs. Stevens. Then she saw the little smile Laura couldn't quite hide. "Now look here, Laura Stevens," she said with pretended severity, "we can't have you getting lost in your own front yard. You must have been out in this Florida sun too long. Lucky for you that your mother is a trained nurse. I just happen to have what will cure you in the house." It was an old game with them.

"Wait a minute, Mom," Laura said. "I wasn't exactly joking."

"You mean you're not just hinting for some lemonade?"

"No." Laura waved an arm around. "Look at this trailer court, Mom. Did you ever notice that almost everybody's house looks exactly the same? The same color; the same shape? You can hardly tell them apart."

"That never bothered you before. Why now?"

Laura tried to be very casual. "I just thought that it would be nice if our house was a different color from everybody else's. Just for a change. For instance, if our house was blue, and all the other houses stayed white, I wouldn't have *any* trouble recognizing it.

"You're up to something, Laura Stevens! You're about to talk me into something, aren't you?"

Laura didn't answer. They went inside to start dinner. "It's the first time I ever knew you cared what color our house is. So before you have your lemonade, suppose you explain what's going on."

Laura sat down. "Well . . . I just happened to stop in Mr. Parradine's bicycle shop today, and he has a beautiful bike for sale, second-hand. A 10-speed job with all the trimmings. And he's put it into fine shape, almost like new. And it's only $50.00."

"You just happened to stop at Mr. Parradine's shop?"

"You know I've been saving for a new bike, Mom. But a new one costs twice as much as this one. Wouldn't it be a good idea for me to buy the second-hand one?"

"It's your money, Laura. Spend it the way you think best."

Laura gave her an appealing look. "But, Mom, I've only saved $30.00."

"I guess you'll have to keep saving then."

"I can't," Laura pleaded. "Mr. Parradine said he'd only save the bike for me till Saturday morning. And that's the day after tomorrow!"

"Doesn't give you much time, does it?"

"What if I painted our house, Mom? Tomorrow. So it would look different from all the others? Would that be worth $20.00?"

"Well, our house could use a change, now that I think about it. And it just might be worth $20.00. Could you paint it by Saturday?"

"Maybe not," Laura said, "but you could pay me in advance, couldn't you?"

"Oh no. Mr. Parradine won't trust you for $20.00. Why should I?"

"You're my mother. That's different."

"Not that different. I have to be sure the finished job is satisfactory before I pay for it. But I will trust you with enough money to buy paint and brushes tonight."

"Hey, that's great! By tomorrow night, the house will be finished, and you'll know it's worth $20.00. Okay?"

"Okay, only I still don't know how you can paint this whole house in one day."

"I'll think of something."

Laura was still figuring out the "something" as she bought the paint. She picked out a shade of sky blue that would make their house stand out from all the others like a blue heron in a flock of snowy egrets. And then she picked out three rollers and three brushes.

When she got home, Laura strolled next door to Samantha's house. The Mad Inventor was in her "workshop" in the back yard. She was taking a radio apart this time.

"Hi, Sammi," Laura yelled, "Lizards, have I got exciting news for you!"

Interest began to gleam behind Sammi's big round glasses. She smiled and put down some tubes and wires. "Oh yeah? What's up?"

"Well," Laura took a deep breath and started. "My mom's going to let me paint our house tomorrow. And she said I could let you help. I've already got the paint and a brush for you and everything. Boy, will we have fun, Sammi! I'll let you start . . ."

"Hold it, Sport." Sammi peered at her friend and then began to chuckle. She'd seen through it in time this time. "I'd like to help you Laura. I really would. You were *so* nice to buy me a brush and all . . ."

"Aw, come on Sammi. You've *got* to help me." Laura would have to level with her. "My mom's going to pay me 20 bucks to paint our house, see. I've got to get it painted tomorrow, or I'll lose the bike Mr. Parradine is saving for me until Saturday."

"You mean that second-hand 10-speed he's got?"

"Yeah. I only need 20 more bucks to buy it. But I have to earn the money before Saturday. And I need you and Tony to help me out."

"Mmmmm . . . I really am sorry," Sammi said, "but I promised my mom I'd catch enough fish for dinner tomorrow night. I've already bought shrimp for bait. If I don't use them tomorrow, they'll spoil. Maybe you can still get Tony to help, though."

The two took the shortcut to Tony's house, and Laura repeated her story—this time straight out.

"Gee, I'm sorry, Laura, it *would* be kind of fun to paint a big thing like a house, but I can't do it tomorrow. I'm going fishing."

"Hey, Tony, let's go together," Sammi piped up. "We can both fish off our dock."

Then they got started boasting about how many fish they would catch. Each one tried to top the other's claim. Meantime Laura was thinking.

"Listen," she said suddenly, "I think I've got it. What if you could go fishing and help me paint my house at the same time?"

"No way to do that," said Tony, "and get enough fish for dinner. We have seven in our family, don't forget."

"You don't get it!" said Laura. "You can fish off *our* dock. And you can fish all day long. And we'll paint the house at the same time."

"Now wait a minute, Laura," Sammi said. "Anybody knows you can't fish and paint at the same time."

"Sure, anybody knows that. But we're not just anybody! You know that bell Tulfy wears around her neck to scare off birds?"

"Sure," said Sammi. "What's a cat's bell got to do with it."

"Suppose you tie that bell on the end of your fishing pole, and Tony and I get bells for our poles, too. Then we all bait our hooks and fasten the poles on the dock so that they hang out over the water. Then, when anyone gets a bite, the fish will jerk the pole and the bell will ring. Right?"

Tony said, "I'd rather feel my line jerk the pole than listen for an old bell to ring."

Laura went on as though she hadn't heard. "And we'll all be painting the house, and whenever we hear a bell ring down on the dock, we'll know that somebody has a bite."

"I don't know, Laura," Tony said, scratching his head. "I know I like to fish, but I sure hate to paint. I guess I'd rather be fishing the regular way instead of painting your house along with it."

"I guess I would, too, when you get right down to it," added Sammi.

"Listen," Laura said frantically. "I have another idea."

"Forget it," they said firmly. "We're going fishing."

"Suppose," she continued, I got the bike and gave it to you to ride and keep at your house one day a week until September when school begins?"

"Both of us?" Tony asked cautiously. "One day a week for each of us?" Laura nodded.

"What day would I get" asked Sammi.

"Sunday," said Laura promptly. "That means you'd get my bike just the day after I get it from Mr. Parradine!"

"What about me?" asked Tony.

"Wednesday," said Laura. That was the day she mowed the lawn and helped with the shopping.

"Well . . . Yes, why not. Okay. It's a deal." They agreed at last.

Right after breakfast the next morning, Sammi ran over to the Stevens' house. From the end of her fishing pole dangled Tuffy's whole collar. Tony rounded the corner with a fishing pole and a string of Christmas bells. Laura untangled the Tibetan yak bell someone had given her family as she joined her friends outside.

"Hi, crew," Sammi yelled. "Let's give our transmitters a try."

They were in luck. Tuffy's bell made a high *tink, tink*. The yak bell gave a deep *donk, donk*. And Tony's string rang together in a definite *jangle*.

"Everybody got the signals straight?" Sammi checked. Three heads nodded.

"Okay," Laura said. "Let's bait up and start painting."

"First one to stop is a ding-a-ling!" Tony shouted as they all grabbed buckets of paint.

Sammi climbed the ladder in the front of the house. Tony started brushing blue on the bottom half of the house. Laura darted around to start on the back—and to listen. For half an hour brushes swished, rollers squeaked, and paint sloshed in buckets. But no one said a word. All ears were straining to catch a certain sound.

Tink, tink. "It's mine!" Sammi shouted as Tuffy's bell finally rang. In a flash, all three painters had scrambled to the dock.

"What a beauty," Sammi cried, reeling in her catch. "It's big enough for my whole family!"

By late afternoon, the paint crew had reeled in a flounder, three speckled trout, a redfish, and a meter-long snook. And, they had managed to cover the house as well as themselves with a lovely coat of blue. Sammi and Tony were just finishing the front door when Mrs. Stevens returned from work.

"How do you like it, Mom?" Laura asked anxiously, wiping a drip of blue paint off her nose.

"It looks just beautiful, Laura," Mrs. Stevens exclaimed. "It really does make a difference!" Then she looked at the three speckled painters in her driveway. "You and your 'true blue' friends have really earned that bike—and you've brought home the bacon . . . er, redfish . . . too!"

From J. Holding, Jr., 1978, Majesty and Mystery, Level 17, Pathfinder Reading Programs (pp. 272-282). Boston: Allyn and Bacon. Copyright 1978 by Allyn and Bacon. Reprinted by permission.

Write everything you can remember about the story. Do not look back.

SOMETHING FISHY

MULTIPLE CHOICE QUESTIONS

1. Where did the story occur?

a. Florida apartment building
b. Florida mobile home park
c. Florida park
d. Not Given

2. Who is the main character in the story?

a. Alicia Stevens
b. Sam
c. Laura
d. Not Given

3. What does she need to do?

a. Earn $20 to buy a bicycle
b. Borrow $30 to paint her home
c. Convince Sammi not to go fishing
d. Nothing

4. What was the first thing she did to solve her problem?

a. Ask her mom for $20 in advance
b. Buy paint
c. Talked to Tony
d. Nothing

5. When that does not work, what does she do next?

a. Offer to fish for Sammi and Tony
b. Give up
c. Offer to paint the mobile home by tomorrow night
d. Nothing

6. Why does she go to see Sammi?

a. Ask her for $20 to get the bike
b. Ask her to help paint
c. See if she wants to go fishing
d. No reason

7. What happened when that did not work?

a. Went to see if Tony would help paint
b. Went to see if Tony would lend her $20
c. Went to see if Tony wanted to go fishing
d. Nothing

8. What does she suggest that they all do tomorrow?

a. Go buy the bicycle together
b. They go and buy paint
c. Fish and paint at the same time
d. Nothing

9. Why does she also suggest that they can use her bicycle one day a week?

a. To get their money
b. To get them to help paint
c. So they will be her friend
d. No reason

10. What happens the next day?

a. They go and buy paint
b. They paint the home and catch fish at the same time
c. They ask Mr. Parradine to hold the bike
d. Nothing

11. How did the problem get solved?

a. The home gets painted, but Laura's mom will not pay her the $20
b. The home does not get painted, but Laura gets the $20 anyway
c. The home gets painted and Laura earns her $20 to buy the bicycle
d. It does not get solved

SHORT ANSWER QUESTIONS

1. Would you describe Laura's agreement with her friends as a fair deal? _____

Why or Why not? _____

_____

2. Why do you think Laura's mother insisted that the paint job be finished before she gave Laura the money?

_____

_____

3. Why did the author have Laura paint the mobile home for the $20 rather than doing some other type of work?

_____

_____

4. Is there any way you can think of what Laura could have gotten the job done without having her friends help her?

_____

_____

5. What can you learn from this story about getting a job done? _____

_____

6. Have you ever helped paint a house? _____

7. Have you ever been fishing or seen people fishing on TV? _____

Story D

ATALANTA AND THE RACE

by Betty Miles

She was so bright, and so clever, and could build things and fix things so wonderfully, that many young men wished to marry her.

"You don't have to choose, Father," Atalanta said. "I will choose. And I'm not sure that I will choose to marry anyone at all."

"Of course you will," said the king. "Everybody gets married. It is what people do."

"But," Atalanta told him, with a toss of her head, "I intend to go out and see the world. When I come home, perhaps I will marry and perhaps I will not."

The king rose to address them all. "Good day," he said to the crowds. "Good luck," he said to the young men. To Atalanta he said, "Good-bye. I must tell you farewell, for tomorrow you will be married."

Now Atalanta was a clever girl as well as a swift runner. She saw that she might win both the argument and the race—provided that she herself could run in the race, too. "Very well," she said. "But you must let me race along with the others. If I am not the winner, I will accept the wishes of the young man who is."

The king agreed to this. He was pleased; he would have his way, marry off his daughter, and enjoy a fine day of racing as well. So he directed his messengers to travel throughout the kingdom announcing the race with its wonderful prize: the chance to marry the bright Atalanta.

As the day of the race drew near, flags were raised in the streets of the town, and banners were hung near the grassy field where the race would be run. Baskets of ripe plums and peaches, wheels of cheese, ropes of sausages and onions, and loaves of crusty bread were gathered for the crowds.

Meanwhile, Atalanta herself was preparing for the race. Each day at dawn, dressed in soft green trousers and a shirt of yellow silk, she went to the field in secret and ran across it—slowly at first, then fast and faster, until she could run the course more quickly than anyone had ever run it before.

As the day of the race grew nearer, young men began to crowd the town. Each was sure he could win the prize, except for one; that was Young John, who lived in the town. He saw Atalanta day by day as she bought nails and wood to make a pigeon house, or chose parts for her telescope, or laughed with her friends. Young John saw the princess only from a distance, but near enough to know how bright and clever she was. He wished very much to race with her, to win, and to earn the right to talk with her and become her friend.

"For surely," he said to himself, "it is not right for Atalanta's father to give her away to the winner of the race. Atalanta herself must choose the person she wants to marry, or whether she wishes to marry at all. Still, if I could only win the race, I would be free to speak to her, and to ask for her friendship."

Each evening, after his studies of the stars and the seas, Young John went to the field in secret and practiced running across it. Night after night, he ran fast as the wind across the twilight field, until he could cross it more quickly than anyone had ever crossed it before.

At last, the day of the race arrived.

Trumpets sounded in the early morning, and the young men gathered at the edge of the field, along with Atalanta herself, the prize they sought. The king and his friends sat in soft chairs, and the townspeople stood along the course.

"What shall I do?" said Atalanta's father, who was a powerful king. "So many young men want to marry you, and I don't know how to choose.

"I am not so sure of that, Father," Atalanta answered. She was dressed for the race in trousers of crimson and a shirt of silk as blue as the sky, and she laughed as she looked up and down the line of young men.

"Not one of them," she said to herself, "can win the race, for I will run fast as the wind and leave them all behind."

And now a bugle sounded, a flag was dropped, and the runners were off!

The crowds cheered as the young men and Atalanta began to race across the field. At first they ran as a group, but Atalanta soon pulled ahead, with three of the young men close after her. As they neared the halfway point, one young man put on a great burst of speed and seemed to pull ahead for an instant, but then he gasped and fell back. Atalanta shot on.

Soon another young man, tense with the effort, drew near to Atalanta. He reached out as though to touch her sleeve, stumbled for an instant, and lost speed. Atalanta smiled as she ran on. I have almost won, she thought.

But then another young man came near. This was Young John, running like the wind, as steadily and as swiftly as Atalanta herself. Atalanta felt his closeness, and in a sudden burst she dashed ahead.

Young John smiled at Atalanta, and she smiled back. "Thank you, sir," said John to the king, "but I could not possibly marry your daughter unless she wished to marry me. I have run this race for the chance to talk with Atalanta, and, if she is willing, I am ready to claim my prize."

Trumpets blew. The crowd shouted and leaped about. The king rose. "Who is that young man?" he asked.

"It is Young John from the town," the people told him.

The king did not like this at all. He was a very ordinary king; that is, he was powerful and used to having his own way. So he did not answer Atalanta, but simply told her, "I have decided how to choose the young man you will marry. I will hold a great race, and the winner—the swiftest, fleetest young man of all—will win the right to marry you."

"Very well. Young John," said the king, as John and Atalanta stood before him, exhausted and jubilant from their efforts. "You have not won the race, but you have come closer to winning than any man here. And so I give you the prize that was promised—the right to marry my daughter."

By this time, each of them has had wonderful adventures, and seen marvelous sights. Perhaps some day they will be married, and perhaps they will not. In any case, they are friends. And it is certain that they are both living happily ever after.

Atalanta laughed with pleasure. "And, I," she said to John, "could not possibly marry before I have seen the world. But I would like nothing better than to spend the afternoon with you."

Then the two of them sat and talked on the grassy field, as the crowds went away. They ate bread and cheese and purple plums. Atalanta told John about her telescopes and her pigeons, and John told Atalanta about his globes and his studies of geography. At the end of the day, they were friends.

On the next day, John sailed off to discover new lands. And Atalanta set off to visit the great cities.

Young John might have given up at this, but he never stopped running. Nothing at all, thought he, will keep me from winning the chance to speak with Atalanta. And on he ran, swift as the wind, until he ran as her equal, side by side with her, toward the golden ribbon that marked the race's end. Atalanta raced even faster to pull ahead, but Young John was a strong match for her. Smiling with the pleasure of the race, Atalanta and Young John reached the finish line together, and together they broke through the golden ribbon.

Once upon a time, not long ago, there lived a princess named Atalanta, who could run as fast as the wind.

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Write everything you can remember about the story. Do not look back.

ATALANTA AND THE RACE

MULTIPLE CHOICE QUESTIONS

1. When does the story take place?

a. A long time ago
b. Once upon a time, not long ago
c. About 1776
d. Not given

2. Who are the main characters in the story?

a. Betty Miles, Young Men
b. Atalanta, Young John, King
c. Jeanette, Young Doug, King
d. Not given

3. What is the problem in the story?

a. Too many fast runners enter the race
b. The king wants to marry his daughter off, but she does not want to marry yet
c. Young John is a slow runner
d. No problem

4. What does the King do to solve the problem?

a. Have a race where the winner can marry Atalanta
b. Order Atalanta to find a husband
c. Make Young John a faster runner
d. Nothing

5. What does Atalanta do when she hears of the race?

a. Finds a husband
b. Runs away to see the world
c. Enters to run in the race also
d. Nothing

6. What does she do to get ready for the race?

a. Comes back home to be married
b. Runs every morning
c. Plans the wedding
d. Nothing

7. Why does Young John practice to run in the race?

a. He wants to be friends with Atalanta
b. He wants to marry Atalanta
c. He wants to become King someday
d. No reason

8. What happened when the race began?

a. Atalanta fell way behind
b. Atalanta and three young men pull ahead early
c. Young John took the lead
d. Nothing

9. How does the race end?

a. Atalanta wins
b. Young John wins
c. Atalanta and John tie
d. Someone else wins

10. What does the king offer to young John?

a. A trip around the world with Atalanta
b. His throne
c. The right to marry Atalanta
d. Nothing

11. What does young John decide to do?

a. Marry Atalanta
b. Spend the afternoon talking to Atalanta
c. Become the next king
d. Nothing

SHORT ANSWER QUESTIONS

1. If you had been John or Atalanta, what would you have said when the race was over and the King said you could get married?

_____

_____

2. What kind of person was Young John? Why do you think so? _____

_____

3. Why do you think the author ended the story with John and Atalanta not getting married?

_____

_____

4. What do you think happened to Atalanta after she traveled to see the world?

_____

_____

5. What do you think would have happened if a racer other than John had tied Atalanta?

_____

_____

6. Have you ever run in a race? _____

7. Have you ever tried really hard to be friends with someone? _____

APPENDIX B

TREATMENT STORIES

THE FOX AND THE ROBIN

A sly fox lived in a den in the forest. Everyday the fox searched the forest for food. He often wished for something different to eat. He thought of the rats and bugs he usually dined on. Surely somewhere in this forest there had to be something more interesting to feast on.

Suddenly, the fox spotted a robin up in a tree eating just what the fox wanted - a piece of cheese! The fox began to climb the tree. Just as he was getting close, the bird flew to another tree. The fox's mouth was watering as he stared up at the cheese. He did not want to eat a rat, when he could have a delicious cheese. "That bird will fly away again if I try climbing the tree!" he thought. "But I have to have that cheese!"

Then the fox decided to try to trick the robin into giving up the cheese. "Mrs. Robin," said the fox, "I have heard that your voice is the best in the forest; I would love to hear one of your beautiful songs for myself." The proud robin lifted her head to sing, but the moment she opened her mouth the piece of cheese fell to the ground. The fox laughed as he looked up at the surprised bird. He was glad that it had been so easy to fool the robin.

So the fox ate the cheese, while the robin went hungry. Then the fox went on his way, looking for a dessert. He was proud of himself for outsmarting the robin.

From M. J. Dreher & H. Singer, 1980, "Story Grammar Instruction Unnecessary for Intermediate Grade Students," The Reading Teacher, 34(3), 266. Copyright 1980 by M. J. Drher and H. Singer. Reprinted by permission.

Fish Story

Robert Tallon

"I've got to get out of here!" Little Fish said. "I'm tired of swimming in the same water. I want a bigger pond."

Big Cat, walking by, heard him. "May I be of help?" Big Cat asked.

"I want to see the world," Little Fish said.

"The world is beautiful up here, really beautiful," Big Cat said. "The flowers and the trees are beautiful. So is the ocean just over the hill."

"Ocean! Old Fish told me about the ocean," Little Fish said. "Can you take me there?"

"Sure," said Big Cat. "First, I'll have to go home and get a bag to carry you in."

"Please hurry back," Little Fish said.

Big Cat came back with a big bag. He put it into the water. Little Fish swam inside.

"Thank you," Little Fish said.

"I'm glad to help a friend," Big Cat said. He licked his lips.

Big Cat ran through the woods.

"How beautiful! Is that a flower?" Little Fish asked.

"It's a flower," Big Cat growled.

"Could we stop?" Little Fish asked.

"No," Big Cat yelled.

"Where is the ocean?" Little Fish asked.

"Just over the hill," Big Cat said. "Now, quiet! You're asking too many questions."

"I'm sorry," Little Fish said. "It's so new to me."

Big Cat ran over the hill and into a house. Little Fish looked around at the pots and pans on the walls. "Is this the ocean?" he asked.

"No. It's my kitchen," Big Cat said. "I'm going to cook you!"

Little Fish shook. "Why me?" he asked.

Big Cat sang to himself as he got a pan ready. "Didn't Old Fish ever tell you about Cats and Fishes?" he asked.

"Are you a Cat?" Little Fish asked.

"Yes, Big Cat's the name. And I'm going to eat you."

"But I'm all bones," Little Fish cried.

"Quiet! I'm trying to read this cookbook," Big Cat said. "I'm starved!"

"Big Cat, wait, please!" Little Fish yelled. "Just look at me. I'm all bones. I'd be just a snack for you. But I know a Big Fish. He's so big, he'd fill this kitchen."

Big Cat looked at Little Fish. "Just where is this big fish?" he asked.

"Back at the pond. He's big enough to last you a month," Little Fish said. "If you take me back, I'll get him for you."

"How?" Big Cat asked.

"Have you got some ketchup?" Little Fish asked.

"What if I do?" Big Cat answered.

"He just loves ketchup. Just take me back," Little Fish said. "Bring a string and some ketchup. Leave the rest to me."

Big Cat took up the bag with Little Fish. He took another bag with the ketchup and raced back to the pond. He put Little Fish into the pond. Then he let down the string with the ketchup.

Little Fish swam out of the bag. "How wonderful to be back in my beautiful pond," he thought. He swam around and around.

Big Cat jiggled the string. "Hurry up, Little Fish. Get your friend. I'm starved!" he said.

Little Fish grabbed the string and swam down with it. "OK, Big Cat," Little Fish called. "Pull it up!"

Big Cat pulled on the string. He pulled and pulled—and landed his catch. It was an old bike!

"You tricked me!" Big Cat yelled. He jumped up and down.

Little Fish laughed as he swam to the center of the pond. "It was just a Fish Story," he sang out. "It was just a Fish Story for a Big Cat!"

From P. D. Pearson, 1982, "Asking Questions About Stories," Occasional Paper #15 (pp. 6-7). Lexington, MA: Ginn & Company. Copyright 1977 by R. Tallon, Holt, Rinehart and Winston. Reprinted by permission.

Blue Jay and the Moon

EMERSON N. MATSON

Long before the great mountains were there, and even before the first snowflake fell, the Great Spirit assigned the moon to light the world during the hours of darkness.

Every night as darkness began to blanket the land, the moon would rise into the heavens and provide the people with light. When daylight began to break, the moon would retire until darkness came again.

One night, the people of the world looked into the dark sky. Only the stars could be seen, for the moon was not there. They thought the moon had forgotten to wake up for her night's work.

"Who will wake up the moon?" the great leader asked the people and all the creatures of the world. But no one answered until the beautiful blue jay volunteered.

"I am indeed a clever bird," the haughty jay told the people. "I'll fly to the edge of the world and wake up the moon."

"If you're going to awaken the moon, Blue Jay, then let me give you some advice on how to pass through the end-of-the-

world door," the great leader advised.

"I don't have time to listen," Blue Jay replied. "I must leave immediately. The hour is late and the journey is far."

Before the great leader could instruct Blue Jay, the bird was sailing through the evergreens in its search for the end of the world. In the darkness, Blue Jay landed near the top of a tall cedar tree. Hopping from limb to limb to the very top, he then sailed to an even taller tree.

As the jay was hopping to the top of the next tree, he met an owl. "Who is there?" called Owl through the darkness.

"It's me, Blue Jay," the bird answered. "I'm going to the end of the world to awaken the moon. We fear she has overslept, and we need her light."

"When you get to the end of the world, you will find a door that's opening and closing," said Owl.

"I know, I know," interrupted Blue Jay. "I'll figure it out when I get there. Now I must leave, for the hour is late and the journey far." And he hopped to a higher branch before spreading his wings and flying to a still taller tree.

The jay was exhausted when he arrived at the end of the world. He had climbed the world's tallest trees in order to reach his destination.

As the owl had warned, there was a door that kept opening and closing. When the door opened, Blue Jay could see the moon seated in her house whittling on a stick.

The door opened and shut, never pausing long enough to allow Blue Jay to pass through. Finally, after watching the door open and shut many times, the jay thought he had figured out the timing, and he flew at the opening. But when he arrived, the big door slammed shut.

The poor jay had flown into the heavy door with such force

it had flattened his forehead and made a bump on the top of his head. He jumped around in great pain, and as the door opened again, he accidentally hopped through and into the house of the moon.

"Katchi, Katchi," was all Blue Jay could say to the startled moon, for the pain from the blow on his head was still great.

"Who gave you the authority to pass through the door into my house?" Moon demanded. "Why did you not heed the advice offered during your journey? It would have saved you much pain."

Still suffering, the jay found words to explain that the sun had set in the west, and the world was very dark.

"All living creatures of the world thought you had overslept, and I came to awaken you," Blue Jay said. "I was in a hurry and did not have time to stop and listen to advice," the bird admitted.

"So it is with many people," Moon stated. "Many times, to stop and listen to sound advice would save much pain later."

Then Moon looked at the jay's flattened forehead and the huge bump on top of his head.

"Feathers will soon grow over the bump on your head, making a crest," Moon said. "Your crest will serve to warn all living creatures that, when advice is offered, time should be taken to listen to it. You did not listen to the warnings sent by Great Spirit."

Blue Jay protested, "Had you awakened on time, I wouldn't have had to make the trip through the darkness." The bird shouted at the moon, "This is your fault, not mine."

"You speak with a loud and disrespectful tongue," Moon said. "The Great Spirit has watched you. The people must be reminded that, if they ever send a person to the end of the

world again, he must speak with respect. You will carry that reminder from the Great Spirit. Your voice will continue to be loud and coarse, but the only word you will be able to say is 'Katchi.'"

"Haw, haw," scoffed Blue Jay. "Because you're too lazy to get up on time, you tell of my punishment."

The moon explained that the Great Spirit had spoken and had ordered her not to shine until later that night. "For making false accusations, you deserve to lose your tongue," the moon charged. "You're lucky you've been spared so that you can say 'Katchi.'"

The jay watched the moon whittle a point on the end of her stick. When she had finished, she handed the stick to Blue Jay, telling him to use the stick to prop against the swinging door when he left.

"This is the advice your leader tried to give you, as did the owl," Moon stated. "Had you heeded it, you would have passed through the door without injury."

The moon then promised to light the world for the balance of the night so that the jay would be able to find his way home.

From E. N. Matson, 1982, Flights of Color, Ginn Reading Program (pp. 306-309). Lexington, MA: Ginn & Company. Copyright 1972 by E. N. Matson. Reprinted by permission.

The Midnight Visitor

by ROBERT ARTHUR

Ausable (aw'zuh-buhl) did not fit any description of a secret agent Fowler had ever read. Following him down the musty corridor of the gloomy French hotel where Ausable had a room, Fowler felt let down. It was a small room, on the sixth and top floor, and scarcely a setting for a figure of romantic adventure. But Ausable, in his wrinkled business suit badly in need of cleaning, could hardly be called a romantic figure.

He was, for one thing, fat. Very fat. And then there was his accent. Though he spoke French and German passably, he had never altogether lost the New England twang he had brought to Paris from Boston twenty years before.

"You are disappointed," Ausable said wheezily over his shoulder. "You were told that I was a secret agent, a spy, dealing

in espionage and danger. You wished to meet me because you are a writer, young and romantic. You envisioned mysterious figures in the night, the crack of pistols, drugs in the wine.

"Instead, you have spent a dull evening in a French music hall with a sloppy fat man who, instead of having messages slipped into his hand by dark-eyed beauties, gets only a prosaic telephone call making an appointment in his room. You have been bored!"

The fat man chuckled to himself as he unlocked the door of his room and stood aside to let his discomfited guest enter.

"You are disillusioned," Ausable told him. "But take cheer, my young friend. Presently you will see a paper, a quite important paper for which several men have risked their lives, come to me in the next-to-the-last step of its journey into official hands. Some day soon that paper may well affect the course of history. In that thought there is drama, is there not?"

As he spoke, Ausable closed the door behind him. Then he switched on the light.

And as the light came on, Fowler had his first authentic thrill of the day. For halfway across the room, a small automatic in his hand, stood a man.

Ausable blinked a few times.

"Max," he wheezed, "you gave me a start. I thought you were in Berlin. What are you doing here in my room?"

Max was slender, a little less than tall, with features that suggested slightly the crafty pointed countenance of a fox. There was about him—aside from the gun—nothing especially menacing.

"The report," he murmured. "The report that is being brought you tonight on Russia's new missiles. I thought it would be safer in my hands than in yours."

Ausable moved to an armchair and sat down heavily.

"I'm going to raise the devil with the management this time, and you can bet on it," he said grimly. "This is the second time

in a month somebody has gotten into my room off that confounded balcony!"

Fowler's eyes went to the single window of the room. It was an ordinary window, against which now the night was pressing blackly.

"Balcony?" Max said, with a rising inflection. "No, a passkey. I did not know about the balcony. It might have saved me some trouble had I known."

"It's not my balcony," Ausable said with extreme irritation. "It belongs to the next apartment."

He glanced explanatorily to Fowler.

"You see," he said, "this room used to be part of a large unit, and the next room—through that door there—used to be the living room. *It* had the balcony, which extends under *my* window now.

"You can get onto it from the empty room two doors down—and somebody did, last month. The management promised me to block it off. But they haven't."

Max glanced at Fowler, who was standing stiffly a few feet from Ausable, and waved the gun with a commanding gesture.

"Please sit down," he suggested. "We have a wait of half an hour at least, I think."

"Thirty-one minutes," Ausable said moodily. "The appointment was for twelve-thirty. I wish I knew how you learned about that report, Max."

"And we wish we knew how it was gotten out of Russia," Max replied. "However, no harm has been done. I will have it back—what is that?"

Unconsciously Fowler, who was still standing, had jumped at the sudden rapping on the door. Ausable yawned.

"The gendarmes," he said. "I thought that so important a paper as the one we are waiting for might well be given a little extra protection tonight."

Max bit his lip in uncertainty. The rapping was repeated.

What will you do now, Max?" Ausable asked. "If I do not answer, they will enter anyway. The door is unlocked. And they will not hesitate to shoot."

The man's face was furious as he backed swiftly toward the window, with his hand behind him he flung it up and swung a leg over the sill.

"Send them away!" he rasped. "I will wait on the balcony. Send them away, or I'll shoot and take my chances!"

The rapping on the door became louder. And a voice was raised.

Monsieur (muh-syoor')! Monsieur Ausable!"

The doorknob turned. Swiftly Max pushed his left hand to free himself from the sill and drop to the balcony outside. And then, as he dropped, he screamed once, shrilly.

The door opened and a waiter stood there with a tray, a bottle and two glasses.

"Monsieur, the drink you ordered for when you returned," he said, and set the tray upon the table, deftly uncorked the bottle, and retired.

Fowler stared after him.

"But—" he stammered, "the police—"

"There were no police." Ausable sighed. "Only Henri whom I was expecting."

"But won't that man out on the balcony—" Fowler began.

"No," Ausable said, "he won't return. You see, my young friend, there is no balcony."

From R. Arthur, 1976, Impressions, Houghton Mifflin Reading Program (pp. 136-140). Boston: Houghton Mifflin. Copyright 1967 by R. Arthur, Random House. Reprinted by permission.

Rescued by Dolphins

by ARTHUR C. CLARKE

Johnny Clinton was an accidental stowaway aboard a hovership, a twenty-first century land-sea freighter, that crashed while flying over the Pacific Ocean during the night. He became very frightened when he saw the lifeboat and the crew members heading away from the wreckage. When he found a large packing crate to use for a raft, Johnny was able to relax a little and even enjoy the beauty of dawn until he saw dozens of gray, triangular fins heading toward him through the water.

As those fins sliced toward the raft, cutting through the water with incredible speed, Johnny thought of all the frightening tales he had read about sharks and shipwrecked sailors. He drew himself up into as little space as possible at the center of the packing case. It wobbled alarmingly, and he realized how small a push would be needed to turn it over. To his surprise, he felt little fear, only a kind of numb regret and a hope that, if the worst came to the worst, it would all be over quickly. And it seemed a pity, too, that no one would ever know what had happened to him. . . .

Then the water around the raft was full of sleek, gray bodies, gliding along the surface in a graceful roller-coaster motion. Johnny knew almost nothing about the creatures of the sea, but surely sharks did not swim in this fashion. And these animals were breathing air, just as he

was; he could hear them wheezing as they went by. Why, of course — they were dolphins!

Johnny relaxed and no longer tried to hide himself in the middle of his raft. He had often seen dolphins in movies and on television, and he knew that they were friendly, intelligent creatures. They were playing like children among the wreckage of the *Santa Anna*, butting at the floating debris with their streamlined snouts, making the strangest whistling and creaking noises as they did so. A few yards away, one had reared its head completely out of the water and was balancing a plank on its nose, like a trained animal in a circus act. It seemed to be saying to its companions, "Look at me — see how clever I am!"

The strange, unhuman but intelligent head turned toward Johnny, and the dolphin dropped its plaything in unmistakable surprise. It sank back into the water, squeaking with excitement, and a few seconds later, Johnny was surrounded by glistening, questioning faces. They were smiling faces too, for the mouths of the dolphins seemed to be frozen in a kind of fixed grin. Johnny found himself smiling back at them.

He no longer felt alone; now he had companionship, even though it was not human and could do nothing to help him. It was fascinating to watch the leathery, dove-gray bodies moving around him with such effortless ease as they hunted among the debris of the *Santa Anna*. They were doing this, Johnny soon realized, purely out of playfulness and fun; they were more like lambs gamboling in a spring meadow than anything he had ever expected to find in the sea.

The dolphins continued to bob up and look at him from time to time, as if making sure that he had not run away. They watched with great curiosity as he pulled off his clothing and spread it to dry in the sun, and they seemed to be giving the matter careful thought when Johnny asked them solemnly, "Well, what shall I do now?"

One answer to that question was obvious: He had to arrange some shelter from the tropical sun before it roasted him alive.

Luckily, this problem was quickly solved; he was able to build a little tent from some pieces of driftwood that he lashed together with his handkerchief and then covered with his shirt. When he had finished, he felt quite proud of himself and hoped that his audience had noticed his cleverness.

Now he could do nothing but lie down in the shade and save his strength while the wind and the currents carried him to an unknown fate. He did not feel hungry, and though his lips were already dry, it would be several hours before thirst became a serious problem.

The sea was much calmer now, and low, oily waves were rolling past with a gentle rocking motion. Somewhere Johnny had come across the words *Rocked in the cradle of the deep.* Now he knew exactly what they meant. It was so soothing, so peaceful here that he could almost forget his hopeless position; he was content to stare at the blue sea and the blue sky and to watch the strange yet beautiful animals that glided and swooped around him, sometimes hurling their bodies clear out of the water in the sheer joy of life. . . .

Something jolted the raft, and he awoke with a start. For a moment he could hardly believe that he had been sleeping and that the sun was almost overhead. Then the raft jerked again — and he saw why.

Four dolphins, swimming side by side, were pushing the raft through the water. Already it was moving faster than a person could swim, and it was gaining

speed still. Johnny stared in amazement at the animals splashing and snorting only inches away from him. Was this another of their games?

Even as he asked himself that question, he knew that the answer was no. Their behavior had changed completely; playtime was over. He was in the center of a great pack of the animals, all now moving steadily in the same direction. There were scores, if not hundreds, ahead and behind, to the right and the left, as far as he could see.

He wondered how long they would keep it up, but they showed no signs of slowing down. From time to time, one of the dolphins would drop away from the raft, and another would immediately take its place, so that there was no loss of speed. Though it was very hard to judge how fast he was moving, Johnny guessed that the raft was being pushed along at over five miles an hour. There was no way of telling, however, whether he was moving north, south, east, or west.

Not until much later in the day did he discover that he was heading toward the west, for the sun was going down in front of him. He was glad to see the approach of night and looked forward to its coolness after the scorching day. By this time he was extremely thirsty; his lips were parched and cracked, and though he was tantalized by the water all around him, he knew that it would be dangerous to drink it. His thirst was so overpowering that he did not feel any hunger; even if he had some food, he would be unable to swallow it.

It was a wonderful relief when the sun went down, sinking in a blaze of gold and red. Still the dolphins drove on into the west, beneath the stars and the rising moon. If they kept this up all through the night, Johnny figured, they would have carried him the best part of a hundred miles. They *must* have a definite goal, but what could it be? He began to hope that there was land not far away and that, for some unknown reason, these friendly and intelligent creatures were taking him to it. But why they were going to all this trouble he could not imagine.

The night was the longest that Johnny had ever known, for his growing thirst would not allow him to sleep. To add to his suffering, he had been badly sunburned during the day, and he kept twisting and turning on the raft in an attempt to find a comfortable position. Most of the time he lay flat on his back, using his clothes to protect the sore spots, while the moon and stars crept across the sky with painful slowness. Sometimes a satellite would drift from west to east, traveling much more swiftly than any of the stars, and in the opposite direction. It was maddening to know that up on the space stations were people and instruments that could easily locate him — if they bothered to search. But, of course, there was no reason why they should.

At last the moon went down, and in the brief darkness before dawn the sea came alight with phosphorescence. The graceful, steamlined bodies all around the raft were outlined with fire; every time one of them shot into the air, the path of its leap was a glowing rainbow in the night.

This time Johnny did not welcome the dawn; now he knew how poor his defenses were against the sun. He put up his little tent, crept beneath it, and tried to turn his thoughts away from his thirst.

It was impossible. Every few minutes he found himself picturing cold milk shakes, glasses of iced fruit juice, water flowing in sparkling streams. Yet he had been adrift for not more than thirty hours; people had survived without water for much longer than that.

The only thing that kept up his spirits was the determination and energy of the dolphins. The school still drove on into the west, carrying the raft before it with undiminished speed. Johnny no longer puzzled himself about the mystery of the dolphins' behavior; that was a problem that would solve itself in good time — or not at all.

And then, about midmorning, he caught his first glimpse of land. For many minutes he was afraid that it was merely a cloud on the horizon — but, if so, it was strange that it was the only cloud in the sky and that it lay dead ahead. Before long he

could not doubt that it was an island, though it seemed to float clear of the water, and the heat haze made its outlines dance and shimmer against the skyline.

An hour later, he could see it clearly. It was long and low and completely covered with trees. A narrow beach of dazzling white sand surrounded it, and beyond the beach, there seemed to be a very wide, shallow reef, for there was a line of white breakers a mile out at sea.

At first Johnny could see no signs of life, but at last, with great relief, he spotted a thin stream of smoke rising from the wooded interior. Where there was smoke, there were human beings — and the water for which his whole body was now craving.

He was still several miles from the island when the dolphins gave him a bad shock; they were turning aside as if to bypass the land that was now so close. Then Johnny understood what they were doing. The reef was too great an obstacle; they were going to go around it and approach the island from the other side.

The detour took at least an hour, but Johnny's mind was at rest now that he felt sure that he was nearing safety. As the raft and the untiring dolphins swung around to the western side of the island, he saw first a small group of boats at anchor, then some low white buildings, then huts with people moving among them. There was a fairly large community here, on this lonely speck in the Pacific.

Now at last the dolphins seemed a little hesitant, and Johnny got the idea that they were reluctant to go into the shallow water. They pushed the raft slowly past the boats, then backed off as if to say, "It's up to you now."

Johnny felt an overwhelming impulse to say some words of thanks, but his mouth was too dry for speech. So he stepped quietly off the raft, found himself in water only waist deep, and waded ashore.

There were people running along the beach toward him, but they could wait. He turned toward the lovely powerful creatures that had brought him on this incredible journey and waved them a grateful farewell. Already they were turning back toward their home in the deep water of the open sea.

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Sybil's Perilous Ride

by ERICK BERRY

Near the shore of Lake Carmel in Carmel, New York, stands Anna H. Huntington's statue of a girl on horseback. The statue is a reminder of Sybil Ludington and of what she did for her New York and Connecticut neighbors during the Revolutionary War.

Sybil's father was the colonel of a militia regiment in the Connecticut colony. On the night of April 26, 1777, he received word from his aide Josiah Hunt that the British army, led by General Tryon, had made a surprise attack on Danbury, only fifteen miles away. On that night, two years after the ride of Paul Revere, sixteen-year-old Sybil Ludington made her daring ride.

Sybil set down a cup of hot mulled cider before Josiah Hunt and brought out bread and the remainder of the ham they had had for supper. From the head of the stairs came a sharp whisper. It was Ricky, Sybil's twelve-year-old sister.

"Just a moment, Ricky," she called back. If she didn't satisfy her sister's curiosity as to who could be coming at this hour of the night, Ricky herself would be downstairs immediately.

There was a heavy knock at the door, and Father went to let in two more men, a Captain Hartwell of his own regiment and Simeon Wingate from up the road a ways. They had heard the news and had come, ready armed, to report to their colonel.

When Sybil came back from reassuring Ricky, a council of war was being held in the kitchen.

"If General Tryon drives southwest to block the Hudson River, he will have Westchester and Dutchess Counties at his mercy," Father pointed out.

Why, that would mean the British would be marching this way! With Danbury only fifteen miles off and Josiah having made poor time through the night, General Tryon might even now be halfway here.

Father's fist cracked down on the table. "We must muster at once. Tonight. We can't wait for orders. Captain Hartwell, you will take my horse and ride north and then east, spreading the alarm. The regiment to muster here; women and children to bundle up their valuables and make ready to move, with all their livestock. We'll leave no booty in Tryon's path."

Sybil was already lighting the candle lantern for the captain; he'd need it to saddle the horse in the barn.

Father looked at Josiah and shook his head. "Best feed and stable your horse, Josh; you'll have need of him in the morning."

Yes, Hunt admitted, his horse was spent. He'd been dogging the British army all the way from the coast, all yesterday and most of the day before. He stumbled out in the wake of Captain Hartwell. Father and Simeon Wingate were conferring. "No, I haven't got a horse, Colonel," Simeon was saying. "I doubt that there's another mount, save Star, Miss Sybil's yearling, this side of the Hasbroucks'."

Father was considering when Sybil raced upstairs again: Father's uniform — he would need that. Swiftly she laid it on the bed, in readiness for him. Then a thought struck her. Why not? Someone must warn those farms to the south and west — someone on horseback because of the need for haste. Star was too young to carry a heavy person, and besides, no one but she or Ricky had ever ridden him. 'Twould be a perilous ride, but what was peril for one person when the whole countryside was in danger?

Father's old work trousers were in her hands; she scarce knew how. A man might pass unchallenged where a girl would not. She was throwing off her waist and

skirt, pulling on the trousers. But her petticoats wouldn't tuck in with any comfort. Nothing to do but find a shirt of Father's and dress as a man.

"Heavens-to-Betsy, Syb! *Atchoo!*" Ricky was sitting up in bed, her eyes streaming from a bad cold.

"If the British are burning Danbury, they may be coming this way," Sybil explained. "I'm riding off to spread the alarm."

Ricky gave an angry little bounce. "You won't, Sybil. If anybody's going, it should be me. I can ride better ——"

Sybil shook her head. "You'll stay in bed where you belong," she commanded. Then pleadingly, "Do be a good girl, Ricky. Father's awfully busy; don't worry him. Go to sleep now."

As she left the room, taking the candle with her, Ricky's voice followed her crossly, "Wait till Father sees you in trousers. Then you'll see who's sent to bed."

But Father hardly noticed her strange garb. Sybil plunged in with an immediate, "I'll ride Star, Father. I'll be quicker than a person on foot."

He seemed to hesitate a moment. Then, "Head south to Carmel and then to Lake Mahopac. Then north to Hasbroucks' and round home. But it's nigh to a thirty-mile ride, and a rough night . . ."

Sybil slipped out and closed the door behind her. Better to go now, before Father could dwell on the danger and change his mind. But thirty miles! It seemed an impossible distance. Why, she had never ridden more than five at the most. For a moment she stood on the step, facing the darkness and the pouring rain. Could she do it? Had she the courage to do it? Then she thought of the two little girls at the Hunters', and the twins at Fergusons', and the invalid wife of Corporal Wentworth. If no one warned them, their homes might be burned over their heads. And there was no one but Sybil Ludington to carry the warning.

Resolutely she tied a shawl over her braids and dashed through the mud and darkness to the barn. The small lantern cast eerie shadows in the dark stable. Captain Hartwell had saddled and was just leaving. Josiah Hunt had watered and fed his mount and was stumbling with fatigue, lifting off the saddle.

Sybil knotted a rope into the usual bit and halter and slipped it over the head of the puzzled Star.

"Best take the loan of my saddle, Miss," said Josiah. "You can't ride all that way bareback. Bad for your horse too." And he slung it on and did something to the girth so it wasn't too loose for the slim yearling.

Star was easy to mount with the help of a stirrup. Using the house as a landmark, she steered him toward the road. The pitch-dark night closed down like a shutter.

The roar of the millstream came clear above the drumming of the rain, and there on the right bulked the shape of the mill. She could see more clearly now, could make out the darker line of the hills against the sky beyond. She hoped Star could see what lay underfoot; she certainly couldn't.

A left turn. Now out onto the road. Star was striding out well and seemed willing to break into a canter. A flip of the rope rein and a kick of her heels encouraged him, though with increased speed the rain beating on her face redoubled its force. Head bent, eyes half closed against it, she tried to tell herself that this was no worse than the people of Danbury, poor souls, were suffering at this moment.

Just about here must be the Gillette homestead. There were no lights in any window. She reined Star down to a walk and, stooping as low as she could, tried to catch an outline of the building against the sky.

But it seemed all forest here — no trace of a clearing. Well, she had missed them, but she must get on. Neighbor must rouse neighbor; she couldn't hope to carry word to every house, even in this sparsely settled countryside. It would take too long, and even now the enemy might be on her heels.

Jake Hunter's was there on the right; she was sure of it. And here was the turn-in. There was a light, too, in the kitchen. But had she really come so short a distance? For this wasn't Jake's after all; it was only the Gillettes'.

She rode Star up to the window and hammered noisily on the shutter with her fist. The window swung open.

"Father sent me to carry warning," she began politely, as though she were inviting the woman to supper at the Ludingtons'.

"You, gal, at this time of night!" said Mrs. Gillette. "Is aught wrong? Hitch, and come right in."

Sybil took a deep breath and tried again, this time in a firmer tone. "The British are burning Danbury. Tell Mr. Gillette that the troops are to muster immediately. Women and children to bundle up their valuables and be ready to drive off livestock if the redcoats come this way. And please spread word to your neighbors." That was her full message. She wheeled Star and headed him down the road. She hoped the woman would believe her and take warning.

Only a short ride — Star more willing now — to the Hunters'. The house was dark; could she afford time to waken them? Oh, she must, for he was a corporal in the militia and mighty dependable.

But she would remember that the message she brought was military. She reined up, hammered lustily at the shutter, and shouted, "Rouse! Rouse! The British are burning Danbury!" There would be no need here to explain what that meant, what it meant to the whole countryside.

A head came out of a window, and Jake's voice said almost placidly, "That'll mean a mustering."

"And please to tell your neighbors," Sybil added.

She was off again, with a growing sense of relief. Jake would know what to do. And she wouldn't have to stop at the next house, a half-mile farther on. Star broke into a canter, and she urged him faster, with the realization of how long it was going to take to deliver each message — even, in the darkness, to find each house. Thank goodness she had changed to trousers; by now her skirts would have been a cold, sodden mass. As it was, the shawl over her head slapped in a wet lump against her chest, carried water like a gutter along her leg; and when in passing it caught on a hanging branch, she let it go.

Two more households were wakened without difficulty, and one even remembered to thank her. Then she encountered what threatened to be a failure. Susannah Oppenshore utterly refused to waken her deaf husband.

"There's been a sight too many musterin's," she snapped at Sybil through the half-open window. "And a man's got his duty by his wife and farm. Likely enough it's a false alarm, like all the others."

Disgusted, furious with the woman's selfishness, scarcely able to believe anyone could be so shortsighted, Sybil tried again.

"But the British are at Danbury. We need every soldier——"

"Let the Danbury folk fight them, then," snapped the woman. "And you go right home and quit pesterin' folks."

Sybil, glancing anxiously along the road, desperate to be off again, noted how much clearer the bare trees showed against the sky. What was that glow? Surely not moonrise, with all this rain. She turned to the woman about to close her window.

"If you don't believe me, Ma'am," she said, "look out at the sky there. 'Tis Danbury burning. You can see the glare of it on the clouds. Like enough the redcoats are marching this way even now."

"The redcoats comin' this way?" The woman's anger changed suddenly to fear. She turned to shout back into the house, "Timothy! You there, Timothy! D'you want us all to be burned in our beds? . . ."

Sybil missed the rest of it.

At Carmel settlement she paused to summon only three; one offered to ride on with her. The thought of having a human companion on the lonely, dark road was tempting, so tempting. But she told him the route she was taking, the road to the lake, and begged him to spread the alarm east along the highroad. Before she was out of the settlement, she heard the raucous clamor of the village bell; it bore her reassuring company for nigh a mile.

Then came a long and cheerless stretch. The yearling's first burst of energy and her own excitement were fading into dull, dogged purpose. She tried to sing against the pelting rain. Star pricked up his ears and seemed to move more cheerfully.

Was the rain really easing? Hard to tell, both she and Star were so wet. But through the dark she could hear the chime of the peepers in the swamp, and once an owl floated past her face, silent as a blown feather. Here, so far from home, she was less familiar with the countryside, and it was fortunate the sky was less dark.

She had by now carried the alarm over eight miles or more of countryside, but that was less than a third of the distance she must go.

Shivering, she was, with cold and weariness. But how about Star? He was willing enough, but could a yearling, who hadn't yet come to his full growth and strength, stay the whole course?

At the next clearing a light already showed in the barn. She splashed up to it, and her voice, hoarse now, delivered her urgent message.

"Danbury, is it?" said the man. "I saw the light and thought as 'twas a house in Carmel burning." He set down the two buckets he had tied over his shoulder. "I won't be needing these now. Reckon a musket'll be more good against the redcoats' kind of fire."

And on again, the lake glimmering on her right through its thick fringe of trees. And after the lake, someone had told her, she must look for a sharp turn right. She found it, or hoped she had. She should be turning north here and could judge her direction by the glow in the sky. This was the least settled, most terrifying stretch of the whole route. Here were no big clearings, no farms, no mills or well-built houses. Just a few squatters, trappers, and such, living with their families in small ill-built cabins, in the forest. And in between, for a mile at a time, the road was no more than a pitch-dark tunnel, with trees close-arched above her head. Once Star shied right across the track and nearly brushed her off against a tree trunk. It might be no more than a raccoon or a wandering porcupine; but there had been wolves here, even in recent years.

With murmurings and a gentling hand she steadied Star to a safer pace, though her instinct urged her to escape at full gallop. "We're important, Star. So much depends on us. If you break a leg or I get swept off and stunned by a bough, the British may catch these people helpless in their beds."

She was frightened now, and she would admit as much. It called for all the courage she could lay hand on to ride in off the road and rouse the next farm. At Ben Hasbrouck's, at the turn of the road, they set her on her new direction and surprised her by telling her it was no later than midnight, when she had thought the dawn itself must be close. But more than half her ride was over. Star, who had gone lame for a while, had only caught a stone in his hoof, and

once she had that out, he was striding out as gallantly as before.

Heavens, how tired she was! Every muscle ached, and her legs and arms were bruised from floundering around among those trees. But strangely enough, she had never been happier in her life, though she didn't know it till she found herself singing again.

A mile or so later and with a good hour's ride still ahead of her, her troubles were already over; someone riding from the opposite direction had already spread the alarm. First there were lighted houses; then there were armed men, in twos and threes, striding on grimly to muster for defense, to fight for freedom. They gave her a shout and some gave her a cheer as Star, spurred on by excitement, galloped past. Soon she was traveling among a little group of riders, who had come from farther west. The group included a woman riding with her husband so she could lead back the much-needed team after he joined his regiment.

The procession grew till there must have been a score or more, pounding the road like a troop of cavalry. Inspired by the other horses, excited perhaps by the two or three lanterns, Star threw up his head proudly and stretched his pace. Through Stormville, where a blacksmith's apprentice was still loudly pounding on a wagon tire to spread the alarm, southeast down a road that grew more and more familiar, they swung.

Into the Ludington lane they galloped, down past the mill, flung open to shelter those who couldn't squeeze into either house or barn. Constant scurrying to and fro, the rumble of voices, the sharp bark of orders from officers — Sybil had seen and heard it all before, but this time she was a part of it. She had received her orders and carried them out like a soldier.

At the gate someone took Star and offered to stable him. 'Twas like giving up part of herself. "Best rub him down," said Sybil. "He's done a long ride." The gathering at the house door made way for her.

"Here she is, Colonel. Here's your aide, sir." And Father himself threw down his quill and, in full uniform, rose from the table to greet her and hear her report, just as he would for a soldier. This was surely the proudest moment of her life.

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Arctic Fire

by JAMES HOUSTON

Matthew Morgan and his father were newcomers to the Canadian Arctic. Matthew was attending school in Frobisher Bay while his father, a geologist, was prospecting.

Too eager to wait for a massive storm to pass, Mr. Morgan and his helicopter pilot, Charlie, set out — and failed to return. When bad weather continued to prevent an air search for the missing men, Matthew and his Inuit, or Eskimo, friend Kayak went off secretly by snowmobile to look for them.

After abandoning their snowmobile when it ran out of gas about 120 kilometers from Frobisher, the two boys continued on foot across the frozen tundra. After several days, their food supply was exhausted, and with a broken bow they had no hope of obtaining more. They realized that their only chance for survival was to give up their search and try to return to Frobisher.

The next day a cold, sharp wind blew against their backs and seemed to drive them forward. Matthew was so hungry he felt light enough to take off and sail across the snow. They entered the mountains just before darkness came, and they hurried through a long valley.

"Just a little farther," Kayak called to him. "I want to build our igloo right up there."

When they reached the height of land, darkness had come.

Kayak ran to Matthew and gripped him by the arm and shook him. "We did it! We did it!" he whispered.

Matthew could not tell if Kayak was laughing or crying.

"See over there. Across the bay. See the glow of lights? That's Frobisher. That's where we came from!"

Far away on the horizon, Matthew could see a faint yellow glow in the sky, as though some strange moon was about to rise.

"I wonder if my dad is over there," said Matthew. "Let's keep on going!"

Matthew took a step forward, but his legs bent like spongy rubber that might let him down at any moment.

"No, no," said Kayak, "that glow must be forty-eight kilometers away." He drew the long snow knife from his pack. "We'll build an igloo here and sleep. We'll feel stronger in the morning."

They left at dawn and traveled down the long slope toward the bay. When they reached the ice, Matthew felt lightheaded.

Kayak squatted in the snow, and taking the broken half of the bow that he had saved, he lashed the snow knife to its grip.

"Why are you doing that?" asked Matthew.

"See that black fog rising way out there?" said Kayak. "The ice has changed. It's broken open. When we get out there, I'm going to have to feel beneath the snow for open water. I don't trust moving ice. You walk only in my footsteps," he added as he carefully probed the ice before him. "Hurry," he said. "See that crack up ahead. It may be opening. It may be getting wider."

They ran toward the blue-green line that zigzagged like a frozen streak of lightning across their path. To the south Matthew could see a great green shining lake where the seawater had flooded over the ice.

"Too wide for us to cross," exclaimed Kayak.

He hurried north along the edge of the crack. Matthew dreaded the look of the dark water that stood gaping before them, sometimes a meter, sometimes a meter and a half, wide.

"We'll never get across," said Matthew, and he felt like falling down and weeping.

"Come on," said Kayak. We have to keep on moving!"

The crack stretched like a long ragged tear in a piece of white paper for as far as Matthew could see.

"Look over there." Kayak pointed. "There is our only chance."

Matthew saw his friend run forward and reach out for a four-foot chunk of ice that had cracked away from the main ice. Kayak caught it with his snow knife and slowly drew it to him.

"I'll go first," he said, putting one foot on the ice pan.

Matthew saw it shudder and sink a little.

"It should hold me," Kayak said.

As though he were treading on eggs, he carefully eased one knee and then the other onto the trembling pan of ice.

"Now push the ice," he said to Matthew. "Not so hard you'll tip me in, but hard enough to float me over to the other side."

Matthew lay on his stomach and with both hands gave the ice a steady push. Kayak was on his hands and knees. A light breeze whipped across the ice and caught him like a sail, so the ice pan turned half around. Matthew closed his eyes and prayed.

"Thanks a lot," he heard Kayak shout, and when Matthew opened his eyes, he saw Kayak scrambling onto the ice on the other side of the widening crack.

Kayak then began to chip two holes in the ice pan about four inches apart. He worked downward in a V-shape until the two holes touched. Then he forced a

piece of tent line through the ice and tied it tight.

"Get ready," he called to Matthew, and pushing the ice with his foot, he sent it drifting back across the crack. "You're heavier than I am and that ice is very tippy even though it's thick," shouted Kayak. "You be mighty careful how you climb onto it."

With the deadly cold water all around him, Matthew felt like an elephant balancing on a cold round ball. Slowly, cautiously, Kayak drew Matthew toward him across the widening gap between the heavy shore ice of the bay and the great central body of ice, until Matthew, too, could crawl onto the strong ice.

If the two boys could have seen where they were going from an airplane, they would not have been in such a hurry to cross that deadly gap, for the ice in the center of Frobisher Bay was broken into a dangerous jigsaw puzzle of slowly moving pans of ice, rising and falling as much as three meters on the huge tides pulled by the terrifying forces of the moon.

"I think we're going to be all right now," Kayak called to Matthew. "The wind should make it easier to get onto the shore ice across the bay near Frobisher."

He was wrong. Dead wrong. For the next six hours they hurried across the vast broken ice fields, driving the knife in before taking every step, testing. Kayak warned Matthew a dozen times to step only in the footprints that he himself had made.

In the late afternoon they watched with terror as the huge tide flooded the ice, creating deadly lakes just south of them. With each step Matthew imagined he could feel the broken ice beneath them moving south toward the Hudson Strait, where they would be swept to certain death in the North Atlantic Ocean.

As darkness came again, Kayak squatted on the ice and placed his head in his hands. He was trembling, and Matthew could not tell whether it was from cold or hunger or fear.

"It's no use going any farther," said Kayak. "I can feel it; we are being swept away. The tide is carrying us too far south.

We will never reach the other side."

"What do you mean?" said Matthew, horrified.

"See that hill?" asked Kayak, pointing. "It was far to the south of us this morning when we crossed the tide crack. Now it is so far to the north I can scarcely see it. We have moved twenty-four kilometers south already. By morning we will have drifted forty-eight, almost sixty-four, kilometers away. We are lost, I tell you. Lost forever. Look. Look how the ice has split." Kayak showed him. "We were once on pans a kilometer square in size. Look how all of them have broken. You could not walk fifteen paces now without falling into water. I am sorry, Matthew, we are truly finished."

A cruel blast of wind swept out of the north, driving chilling swirls of ice fog around them.

"We must build an igloo," said Matthew, unlashing Kayak's knife from the broken bow.

"It is too difficult out here," Kayak mumbled. "The snow is wet with salt water."

"Still, we must try our best," said Matthew, and he paced out the small circle as he had seen Kayak do and began to cut the thin, damp blocks. Big wet flakes of snow came driving on the wind.

"Come and help me," Matthew called to Kayak.

"Don't move," answered Kayak in a whisper. There was terror in his voice.

Cautiously Matthew turned and saw a white head with black beady eyes move snakelike through the icy water. When it reached the small ice pan on which they stood, the huge polar bear heaved its bulk out of the water and shook itself like an immense dog. It looked yellow against the stark white snow.

Matthew saw the great bear swing its head back and forth, sniffing the air suspiciously. Its huge blue-black mouth hung open, showing its terrible teeth. With a rumbling growl, the giant bear lowered its head and came shambling toward them.

Matthew and Kayak lay as still as death on the ice, their heads turned so that they could watch the bear. Matthew clutched the snow knife like a dagger and

trembled inside as he felt the wet salt water seep up from the snow and soak his clothing.

The bear did not even pause to look at them as it stalked past. They saw it crouch down flat against the snow.

Matthew looked ahead and saw a seal's dark head, alert and motionless in the water. The bear was watching it intently.

Seeing nothing move to frighten it, the seal relaxed and let its back float to the surface as it drew a large breath of air into its lungs and dove beneath the ice in search of food.

The bear snaked forward cautiously until it reached the very edge of the ice where it had seen the seal. It reached out its paw and scratched against the ice.

The seal must have heard the sound beneath the water and, being curious, it once more raised its head above the surface. Seeing nothing but a yellowish heap of snow, it swam along the edge of the ice.

Suddenly, with lightning swiftness, the bear's right paw shot out and struck the seal's head a killing blow. The left paw lunged forward and hooked the seal inward with its great curved claws. Using its sharp teeth, the bear easily hauled the huge seal up onto the ice pan.

Matthew watched it sniff the dead seal all over, then roll it on its back and, holding it steady, tear its throat open with powerful jaws. The bear started to devour its prey. "Be still," Kayak hissed through his teeth, now chattering from cold and fear.

At last Matthew saw that the big bear was finished eating. They watched it as it licked its lips and, like a huge cat, carefully wiped the seal fat from its mouth. It turned and shambled toward them, paused and sniffed the air. With its belly rumbling, it padded once more to the edge of the ice and slipped silently into the freezing water. Kayak sat up carefully as the bear swam south. It climbed up on another pan and ambled off, disappearing into the whirling snow.

Kayak rolled stiffly onto his hands and knees. Then crouching like an animal, he still watched the place where they had last seen the bear.

"I'm soaking wet." He trembled. "Get up," he called quietly to Matthew. "We're in trouble now, worse than we've ever been before."

The north wind seemed to

press its freezing hand against Matthew's soaking clothes. It glazed them with a thin white sheath of ice as stiff as armor.

"Being wet will kill us sure," said Matthew, shivering like a dog. "What will we do?"

"I don't know. We'll have to think of something," said Kayak, and he went forward and felt inside the seal.

In the half darkness Matthew saw him cut the big artery and then pull the seal's heart out and set it on the ice.

"Quick; we've got to build a shelter. Work hard and it will warm you up a little. Move your arms and legs," Kayak said, "so your clothing won't freeze stiff."

On one end of their pan, sheets of ice the size of tabletops lay scattered like playing cards, forced there by the pressures of the rising tides. Kayak stood three upright, leaning them against one another. Then together they hauled two more into place to form a rough circle.

"Now gather snow," said Kayak. "We'll chink up the holes and cracks between the ice to make it strong. If the house should blow down with the wind tonight, we could never build a new one in the dark."

When their crude shelter was finished, it looked like nothing but another miserable pile of ice.

Kayak hurried away and returned with the frozen heart and the torn remains of the seal. He dragged them inside the little ice cave.

"It's just as cold in here," said Matthew. "We've only built a grave for ourselves."

"Unless we make a fire."

Kayak took the last matches carefully from his pocket and felt them. "They are soaking wet," he groaned, "and their heads have come off. Useless," he said, and flung them on the snow.

"Then we can't make a fire," cried Matthew through his chattering teeth. "We've got no lamp, no matches, and everything is soaking wet."

He saw Kayak take the snow knife and hack white chunks of seal fat from the inside of the carcass and set the frozen heart up in the snow like a small melon with its top cut open.

"Give me your little knife," he said, and with it he trimmed a

narrow piece off the back tail of his shirt in a place where it was still dry.

"I hope I didn't lose it," Kayak said, searching his pockets with his freezing hands. "I've found it. My little piece of flint." He handed it to Matthew. "Hold it carefully. Don't drop it. It's worth more to us than gold."

Matthew had to help Kayak cut open the freezing front of his parka so that he could reach into his inside breast pocket to get his little carving file and a wad of fine steel wool.

"They're soaking wet," said Kayak. "Feel in your hip pockets. They're still dry. Can you find any pieces of lint or string?"

"Only this bit of string," said Matthew. "Nearly nothing."

"It may be enough. Roll it into a loose ball," Kayak said. "Now, Matthew, you do everything exactly the way I tell you. If you get your hands a little bit burned, don't mind it, understand me?"

Matthew wanted to laugh at him or cry. "How are you going to burn my hands? They're almost frozen."

He watched as Kayak struck the flint along the steel teeth of the little file. On the third try, sparks flew into the wet steel wool, and Matthew gasped in surprise as he saw the fine steel wire spark and begin to flare red and burn. The fire fizzled out.

"Now," said Kayak. "If I can light it again, you put the dry string in the spark with your finger. Do it right! My hands are freezing."

He struck the file again a dozen times before the steel wool sputtered into running sparks. Matthew held the wad of string against the tiny flame.

"Hold it there. Don't let it go out."

Kayak took the shirttail wick that he had made, rubbed it with seal fat, and held it in the tiny glow.

"Don't breathe on it just yet," he said, and waited.

Matthew felt a blister raising on his finger.

"Don't move the wick," Kayak ordered.

Slowly the seal fat sizzled; then a real flame burst into life. Kayak blew gently on it and then carefully stuffed one end of the

wick into the well of glistening seal fat that he had stuffed into the open cavity of the frozen seal heart. The white, candlelike flame expanded as the seal fat softened and soaked upward into the homemade wick. Working as painstakingly as a surgeon, Kayak spread the cloth wick with his knife until the flame widened. He let out his breath in satisfaction when he saw that at least three inches were burning hotly. The ice shelter reflected the joyful light. Matthew held his hands out, spreading his stiffened fingers in the life-giving warmth.

"I would never have believed," Matthew said quietly, "that you could make a lamp stove out of a frozen seal's heart and make wet steel wool burn."

With Matthew's knife Kayak cut strips of rich red seal meat from the carcass where the bear had scarcely touched it. Together they warmed the strips over the little lamp and ate them. Matthew thought that he had never tasted anything so good.

"Now come on," Kayak demanded. "We go out of here and run around this little house as many times as you have fingers on your hands and as I have toes."

When they came inside once more, Matthew felt warm all over, as though the seal meat in his stomach were fuel on fire within him. His face and hands seemed to burn in the strong warmth and flickering light of Kayak's clever lamp.

Kayak unrolled the sleeping bags, which were only a little damp.

"Tonight we sleep resting on our knees and elbows," he said. "The snow's too wet for us to lie down."

Kayak pulled off his parka and beat it with the piece of broken bow until the sheath of ice fell away; then he put his parka on backwards.

"Why are you doing that?" asked Matthew.

"Because I'm going to pull up my hood and breathe into it. That way I catch all my body heat. You do the same. It's a trick I heard about from my mother's relatives. It might help to save our lives."

In the first light of morning,

Matthew heard the ice grinding and had the uneasy sense that their whole house was slowly turning. Kayak pushed out the piece of ice that he had used to block the entrance.

"Look up there!" he yelled at Matthew.

Matthew, still crouching stiffly, looked up and in the sky saw a long, thin, white contrail.

"It's the big plane," said Kayak, "going into Frobisher Bay or maybe over to Greenland. No use waving your arms," he said in a discouraged voice. "It can never see you. It must be two miles high."

Matthew whirled around, dived back through the entrance, reached into his pack, and leaped outside holding the snowmobile's mirror.

"Give me the knife, the knife!" he shouted.

With its point he scratched a small cross in the coating on the back of the glass. Then, standing in the rays of the morning sun, he placed the mirror against his eye and looked through the cross for the plane. Through the tiny opening, he could see it moving through the cold blue sky like a slow silver bullet. He tipped the glass back and forth, back and forth, back and forth. He continued to watch the airplane through the hole until it was out of sight.

"What's that? Some kind of magic you are doing?" Kayak asked him.

"No," answered Matthew. "It was nothing, I guess. My dad told me that sometimes a pilot can see a mirror flashing from a very long way off.

"Well, it didn't make them turn around," said Kayak. "They're all just sitting up there warm and dry and comfortable, drinking coffee in the sky."

"I guess you're right," said Matthew, and he dropped the mirror in the snow.

"The ice, it's breaking in half," cried Kayak. "Quick!"

He grabbed Matthew by the arm and forced him to jump across the gap. As they watched, half of their shelter broke apart and slipped into the water.

"The sleeping bags and pack are gone," cried Matthew, and he lunged forward to grab the heart lamp and the seal remains.

Just before evening they took

the few pieces of flat ice that had not slipped into the water and once more tried to build a shelter, though it was scarcely big enough to house a wolf. When they had finished stopping up the holes with soggy snow, Kayak stepped up, pulled off his wet mitt, and solemnly shook hands with Matthew.

"I wish we had known each other for a longer time," he said, "but I . . . I'm going to say good-by to you now, Matthew."

"Oh, don't say that." Matthew spoke in a choked voice.

"Why not?" said Kayak. "What is going to be — will be."

He started to pull the last remains of the seal into the crude little house and then suddenly changed his mind and began to circle round the house, pressing down hard, leaving a dark red trail of seal blood in the snow.

"Now you're trying magic, aren't you?" Matthew cried. "What good will that do?"

Kayak didn't answer him. The only sound was the moaning of the ice in the gathering gloom. Together they crawled inside and huddled side by side and ate some seal meat.

They slept, crouching like animals in the lamp's faint glow, until the first light of morning filtered faintly through their icy shelter.

"What's that noise?" gasped Kayak. He cocked his head and listened.

"I don't hear anything," said Matthew. "Wait! Wait! Yes, I do. I do!"

They kicked away the thin ice door and scrambled out the narrow entrance.

Thug-thug-thug-thug-thug.

They heard a helicopter's engine driving the whirling blades through the glittering ice fog overhead.

"Look at us, we're here! Right here!" screamed Kayak.

"Come back! Don't go away!" they yelled together, waving their arms.

"It's going! It's going. It can't see us in the fog," said Kayak. "And we were in the house."

Thug-thug-thug-thug-thug.

"It's turning! It's coming back!" Matthew shouted and danced upon their pan of ice that was now shaped like a broken marble tombstone.

Then suddenly the helicopter loomed through the fog, hovered like a giant bird, and then swept toward them. Like a pair of partly frozen scarecrows, they danced a jig together.

"It's Charlie's helicopter!" Kayak yelled. "It's the *Waltzing Matilda.*"

They could see Charlie in the gleaming bubble, waving at them wildly. One door of the helicopter slid open, and Charlie flipped out a short rope ladder with metal rungs. Kayak staggered across the ice pan and grabbed it.

"I'm too weak to climb," he screamed at Matthew.

"I'll help you," Matthew shouted, and with his last remaining strength, he heaved Kayak onto the dangerously swaying ladder.

"Get in!" Charlie shouted over the roar of the engine.

Kayak grabbed Matthew by the hood of his parka and helped pull him up the ladder. Matthew slumped down behind them. There was little room inside.

"You two all right? Feet not frozen? No bones broken?" Charlie shouted.

They shook their heads.

He reached across Matthew, slid the door closed, and then gunned the engine. *Waltzing Matilda* whirled up above their little ice shelter. Kayak looked down for the last time at what had almost been their grave.

Charlie pointed down and said, "Whoever made that red circle around that ice shack of yours certainly saved your lives. I would never have found you without that red bull's eye. Where did you get the paint?"

"It's not paint," said Matthew. "He thought of the idea." Matthew nodded toward Kayak. "He saved us."

"It worked like magic," Charlie shouted. "And where did you get the mirror? The one you flashed at the airplane that was coming into Frobisher. If the flight crew hadn't seen that mirror shining, we'd never have found you. The aircraft and the rescue teams were looking for you inland. That mirror saved your lives!"

"Matthew thought of that," said Kayak.

"There's lots of people who are going to be mighty glad to

see you two. I imagine you could use a good hot meal. Here," he said and handed each of them a chocolate bar.

Eayak's hands were so weak and trembling from the climb up the ladder that he had to tear the wrapper with his teeth.

"Is my dad okay?" asked Mathew.

But Charlie had his earphones on and was speaking excitedly into his microphone and did not hear the question.

Matthew felt lightheaded as they began to rise through the dangerous ice fog. Beneath them spread the deadly puzzle of broken ice widening into dark open water to the south. He had never felt so glad to be away from any place in all his life. In the cabin's warmth his head nodded forward, and he fell into an exhausted sleep.

Twenty minutes later Matthew awoke as the helicopter landed in a whirling haze of snow crystals. Charlie turned off the engine, and the big blades stopped and hung silent in the harsh Arctic light of morning. Matthew, tears running down his cheeks, saw his father amid the stream of people running out of the hangar toward them.

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Mustang

Our day began early, as always. Charley, my husband, was planning to bale the dried alfalfa and I was off to Reno to start my new job.

I liked driving to the city in the early morning. And this morning especially. The sun was edging up around the mountains, and high on Mount Rose two dollops of snow were dark-wetting the slope as they melted and came trickling down to join the Truckee River.

Like any dyed-in-the-wool rancher I smiled at the precious moisture. "The Truckee needs all she can get," I thought.

I sniffed the air. It was still cool and sweet. My sandwich and an apple lay on the seat beside me, and the camera with its expensive color film that we saved only for miracles, like the double rainbow I'd once caught. Beside it lay a book to read at lunchtime. I can still remember its title: *The Sea of Grass*. I'd chosen it because I hoped it would tell of long-ago days when the old West was an ocean of grass that billowed on and on until the mountains put an end to it; and herds of buffalo and wild horses roamed free, and were free for the taking.

It was still too early for traffic. My little roadster hummed along at full speed. I'd get to the office ahead of time, and Mr. Harris, my boss, would nod in pleasure. Then we'd whiff through the morning's mail, and soon it would be noon and for a whole wonderful hour I could lose myself in the wind-rumpled miles of grass.

Suddenly I stopped day-dreaming. An enormous cattle truck loomed in front of me. I drove up close, expecting to see white-faced Herefords or shiny black Angus' or gray clouds of sheep.

Then my hands clutched the wheel and my throat knotted at what I saw. The truck was jammed, crammed, packed with mustangs, more dead than alive! Tatters of flesh hung loose on their necks. Blood trickled from their nostrils. They had the look and stench of death. All that kept them on their feet was the way they were wedged in.

The shock stunned me. My ears rang; the earth whirled. Dizzily, I stumbled out of the car. When the earth steadied again I got back in and raced desperately after the truck. For miles I trailed the monster as it roared along the pavement, belching black fumes in my face. Sick at heart I speeded up, then slowed, keeping the truck just in sight, trying not to look at any one animal. I felt as though I were part of something terrible, horrible, unclean. Where were the mustangs being taken? Why were they in such condition? I had to know.

At a stop sign I came up close and a little foal with a blaze just like that of my mustang, Hobo, tried to poke his head through the bars. He was staring out at me in wild appeal, as if somehow it was my fault, and why didn't I lift a finger to help? I could feel the solid boards of the truck crushing against his chest, against my chest too. They were like prison bars!

Questions flooded my brain. Who was responsible? What could I do? Pa's words rang in my ears: "Torture is the unforgivable sin." Unafraid now, I kept on following, even as the truck pulled off the highway onto a narrow dirt road. The landscape grew lonely and desolate, with no cabins or ranches. Just bare gray earth, and bare brown mountains, and tumbleweeds dead and forlorn.

I looked at my gauge; the tank was half full. I looked at my watch. The office would be at its busiest now. Everyone would be wondering about me. As I followed the truck on and on, the gentle morning sunshine gave way to merciless heat. Blood and sweat crusted on the horses' bodies. Heads bobbed nervously, then drooped low, and lower. I could see

their muscle tremors and their breath coming fast, as if they were being pursued. The dizziness came on me again. Frantically I clung to the wheel.

The truck was turning into a narrow, dusty byway. I cranked my windows tight; still the dust seeped in. The horses were all but lost in it.

At last the truck came to a stop in front of a low brick building. Above the door, in ragged crimson letters, as if painted in blood, were the words: Rendering Plant.

I slowed to a stop. In my daze I wanted *not* to look, but I was hypnotized. Two brawny men were lowering the tailgate of the truck. To my horror I saw that some of the horses were hobbled, hindfoot to forefoot! Now their feet were jerked out from under them, and on their sides they were pulled like cold carcasses across the tailgate and into the plant. Only their heaving bodies showed they were still breathing.

I knew now why they had not been killed. They had to be brought in alive or their flesh would have rotted in the sun. But at last death would come. It might not be gentle, but surely it would be swift. And then their meat would be ground and stuffed into cans.

In fierce rage I flipped open my camera and snapped pictures of the grim scene. One of the men saw me and stalked over to my car. He thrust his dark-bearded face close to mine.

"Listen," he snarled, "you burn them pictures, or I'll——"

I whirled the car about, and he half fell out of my way, firing a volley of curses after me.

Somehow I arrived at the office. Oh, the peace of it! The low-toned voices. The whisper of papers. The whir of typewriters. Eyes followed me asking, Why are you late? But I explained only to Mr. Harris.

"I can understand your feelings, Annie," he said. "You were thinking of your own Hobo and what he's meant to you."

"Not only of him. But because of him I feel kin to his whole tribe. That's why I've got to do something to stop this cruelty. Something! Anything!"

Mr. Harris shook his head in concern. "Annie," he said, "the demand for horsemeat to feed dogs and cats and even chickens has become big business. So big now that the hunters can afford to ride roundup in their own private planes. They're not just Nevadans, either. They come from other states."

I was shocked. "Do you mean that the little planes I often see skimming low over the foothills could be mustangers?"

"That's exactly what I mean. And those pilots are a tough bunch; they want no one messing in their business. You'd better leave them alone."

Charley had been baling all day and looked sunbeat and tired when I reached home. I waited until after supper to tell him. When I explained all I had seen and learned about the mustangers, he put down his cup of coffee and his face had a look of deep pain and sadness.

When at last he could speak, his voice came deadly slow. "As a boy, my hero was a hard-ridin' cowboy name of Charles Russell, and he used to say: 'The tops of the mountains belong to God and He don't want his wild things disturbed.' That's my creed too."

"Oh, Charley!" I gulped in relief. "I knew you'd help."

"Count on it!" he said, his hands clenched into fists. "We've been so blinded by happiness we let these roundups go on right under our noses. Now, Annie, we got a mighty rough road ahead of us."

"I know. But if we don't do something soon, there won't be any mustangs left."

Pa found out from Charley that I was in dead earnest about saving the mustangs. He stopped at the office one noon, with a look of pride on his face. "Let's tie on the feed bag, Annie," he said. "Your Pa's got things deep in his mind."

As we ate, we stood in the bright sunshine on the bridge just outside the office. Munching away, we looked down at the Truckee River bubbling under the bridge and between the tall buildings. Pa's eyes were fixed on a big-chested duck riding the waves like an ocean-going liner. When the duck flew away in answer to a honk in the sky he turned to me. "Annie," he said, "You can't just rage and gnash your teeth and cry about wild mustangs kicking up dust in the moonlight. That's 'zackly what the flyin' mustangers and the cowmen and sheepmen and all the legal folk are goin' to expect. What I mean is, you got to shock 'em with facts hard as bullets. Annie," he shook his head, "you got a terrible rough road to travel."

I grinned. "You've been talking to Charley Johnston."

"That I have. And I don't aim to interfere with the way you two go about this," he said, waving his fig newton. "That is, after today." And the smile in his eyes spread across his face until it showed the dark hole where two back teeth were missing. Suddenly he turned off the smile the way you'd switch off a lamp. "Remember, Pardner," he said with gruff tenderness, "don't fire your gun unless it's loaded."

Right there, with the noon office people and shoppers passing by, I threw my arms around Pa. "Don't you worry," I cried eagerly, "if facts are what they want, I'll furnish 'em."

With Pa's words ringing in my ears, I set out at once to plan my campaign. To begin with, I went to the local newspapers, urging them to report the cruelties of the plane and truck roundups. The first skirmish came almost before I was ready. It began with a whispered telephone call at midnight.

A woman's hushed voice said, "This is Lura Tularski."

I recognized the name at once. I read her "Saddle Chatter" column in the *Journal*.

Now in a cloak-and-dagger voice she spoke rapidly. "Listen sharp, Annie. Word has leaked out that the local land management office has given permission to a couple of cowboy pilots from Idaho to round up mustangs in the foothills near your ranch. Maybe you can stop them—if you act quickly."

"Yes, yes!" I whispered in mounting excitement. "But how?"

"Why, just block their permit when they apply to the County Board."

"Wh——when is that?"

Tomorrow night at eight. They're trying to keep the meeting secret so there'll be no one on hand to oppose the permit."

"Where's the meeting?"

"In the courthouse at Virginia City. You and Charley have a lot of friends in Storey County, Annie. Round them all up and crash the meeting."

I thanked her and hung up. Aha! I thought. So that's how it's done! Quickly I made a list of names.

At the office next morning I worked fiercely, doing a day's work in four hours. "Mr. Harris," I said at noon, "may I leave now? I've got to help stop a wild horse roundup." Already a plan was forming in my mind.

"How can I say no," Mr. Harris answered, "when your work is already done?"

"Charley is already calling up everyone he knows will be against it—Tex Gladding, the postmaster at Virginia City; Jack Murry, the guard at the state prison; Attorney Richards and Mr. Flick and all the ranchers in the Truckee meadows."

Before driving home I paid a call at the office of the Bureau of Land Management. I wanted to see for myself what their attitude was. The Supervisor, a pleasant little man with a birdlike fuzz on the top of his head, bowed as politely as if I'd come to tea.

"Hm—m——m," he smiled when I told him my name. "You have a ranch in Storey County, do you not?"

"Yes," I said politely.

Offering me a chair, he began to open up like an oyster to the sun. "I understand there are three hundred pesky mustangs just south of your ranch destroying the grazing land. Is that why you've come to see me?"

"Yes, in a way."

"Well, we plan to do something about it."

"Are there really three hundred?" I asked, trying not to show my doubt.

He nodded, and the fuzz on his head blew ever so slightly. "That's what we figure," he replied. "Our fliers spot a straggle of horses and we know full well that a herd is close by. It's like mice," he added, waggling his forefinger. "Where there's one there's bound to be more."

"Oh?" I said, acting spellbound. And then I noticed a package on his desk labeled Roquefort Cheese, and I figured he'd had more experience with mice than mustangs. Even as he spoke, a tiny dull gray mouse ran up the wall and onto his desk, sniffing his way to the cheese. There he stood, up on his hind feet, wriggling his whiskers.

I never changed expression.

"Yes, indeed," the man went on, completely unaware of his furry visitor. "But as I say, we plan to do something about it. We do have the power, you know, to order the complete destruction of all wild horses to save what little grass there is. And," he added in obvious pride, "with these air roundups we can keep the ranges clear for the horses and cattle of ranchers like you, without . . ." here he puffed himself up like a courting pigeon ". . . with no cost to the taxpayer!"

"How's that, sir?" And I leaned forward so suddenly that the mouse ran down the wall and was gone.

"Why, the rendering plants buy up the horses. At six cents a pound, the fliers are well paid when they round up a whole herd. Yes, ma'am! The Bureau has a fine record for saving the taxpayers' money."

I listened in astonishment.

"At the least, seventy-five thousand mustangs have been captured since I've been here. But our work is far from done. Our manager reports hundreds of wild horses still left in the Virginia ranges."

I thought to myself, How can this be? I have seen only one herd running free in all my life. But I didn't challenge him.

After a polite pause I asked, "When, sir, is the next round-up? And are people permitted to watch?"

"Well . . . ll," he harrumphed, "there are certain matters to be considered as to time and place." The eyes behind their dark-rimmed glasses studied me a moment before continuing. "The pilots must first get a permit from the County Board. Then, of course, it depends on the weather."

"I see."

"The next roundup will be in the range between Lousetown and Ramsey, but you wouldn't want to watch. No, ma'am! It's not like a rodeo, you know."

Not like a rodeo! No, I could imagine what it would be like. I stood up to leave; I had all the horrible information I needed.

The trim little man stood up, too. "Don't you worry about your own horses, young lady," he smiled reassuringly. "The Bureau does not allow the shooting of any wild horses for fear that branded ones might be killed."

I thought, Is that the only reason?

The wonderful thing about Charley was that he was never neutral. As we drove to Virginia City that early June evening, he gripped the wheel hard and I could see his lips moving. He was already blasting off at the meeting.

In the distance, white plumes of steam from Steamboat Springs were puffing out of the ground like train smoke snaking along the horizon.

"I've a head of steam on me, too," Charley said. "I can't wait to blow my top."

I sat closer. In tune.

Virginia City always excited me, mountain-high and mountain-walled as it was. Going there was like reaching for the top of the world. But that night as we wound up and up the steep Geiger Grade, it was like reaching toward something dark and dangerous, and important.

When at last we stopped climbing, the ghost city spread out before us like a picture map. The dying sun had colored it pink and purple and burnt orange, and faint lights were blinking in the houses that clung to the mountainside.

A string of cars was hurrying with us up B Street, past Piper's Opera House. The building was only a husk now, its shingles flapping in the breeze. Just beyond, in solid contrast, the Storey County Courthouse stood, in lawful dignity.

We parked close by and began stomping along the old board walk. Even the sound of our heels spoke of the urgent purpose and business ahead.

I glanced up at the statue of Justice over the courthouse door. "Look, Charley! She isn't blindfolded like other statues, and her scales tip even." I made him look up. "It's a good omen," I whispered.

Charley wasn't so sure.

Inside, the scene was like a courtroom in an old melodrama, brass spittoons and all. The only difference was the elegant marble fireplace, marble brought over from Italy in the days when the Comstock lode was rich in silver. Now it was a catchall for waste paper and chewed-down cigars.

The county commissioners and the district attorney were already taking their places behind the rail as we walked in. And at a little table by himself, up in the front of the room, sat Lucius Beebe, editor of the famous *Territorial Enterprise*.

I looked around and saw that the audience was split right down the middle, the "fors" on one side, the "agins" on the other. We took seats in the back row among our friends.

"Gads!" the man next to me said. "Looks like we got a hundred head here, all chomping at the bit."

The wall clock pointed precisely to the hour of eight as the chairman rose to his feet. "I'm Bill Marks," he introduced himself, "owner and operator of the Crystal Bar here in Virginia City."

Some in the audience guffawed as if the explanation were unnecessary. They knew him well, even in his off-work clothes.

The man had a scrubbed pink face and a schoolboy grin which vanished the moment he began reading aloud the application for a permit. "To round up by plane," it said, "all unbranded wild horses found on the land between Lousetown and Ramsey."

He leaned over the table now, and spoke directly to two men in the front row. They were dressed differently from us ranchers. They wore shiny black jackets and one wore goggles perched on the back of his head.

"Are you the pilots from Idaho?" Mr. Marks asked.

Like twin mechanical toys, the two fliers hunched forward as one, nodded as one.

Lucius Beebe scratched a few notes on the back of an envelope. The scratching gave me the shivers.

The chairman proceeded. "The names of Clark and Burger are also on this application. Would one of these gentlemen explain the need for this roundup?"

A chunky man arose. "I'm Clark. Own a thousand sheep. And them sneakin' mustangs," he whined, "is over-runnin' my range lands. If somethin' ain't done soon, my sheep'll starve."

Charley and I looked at each other. We had never seen a wild mustang anywhere near our place. I wanted to cry out, "You lie!" But someone did it first.

"He's a liar!" a weather-beat rancher shouted. "My land abuts his and I ain't seen a band o' wild ones in five year."

Clark exploded. "I'm tellin' you . . . them scroungy broomtails is eatin' all my forage and spoilin' my land."

An old man on our side of the aisle struggled to his feet, knee joints cracking. "Mr. Chair," he said in his high old-man's voice, "that feller is yawpin' about land that ain't even his'n. He leases it from the Bee-yuoro of Land Management." He stumbled over the word "Bureau," and the "fors" laughed the old man down.

Bill Marks rapped for quiet. "The gentleman is right. We all know that everybody leases his land. Let's hear from the Bureau man."

My acquaintance of the afternoon eagerly jumped to his feet. A wall light made a halo of the duck fuzz on his head as he waited for the question.

"How many wild horses," the chairman asked, "do you reckon there are here in Storey County?"

"At least three hundred," was the quick reply. Then gulping a breath, the little man began spitting out statistics: "Eighty per cent of Nevada is federal land, and I don't need to tell you ranchers that it takes sixty acres to feed a cow and her calf, and almost as much to feed a ewe and her lamb."

Lucius Beebe belched, as if the remark made him ill.

The man went on, ignoring the interruption. "My Bureau is responsible for keeping the number of wild animals reduced for the benefit of the men who raise cattle and sheep. And we are proud . . . Yes sir! We are proud . . ." here he beamed on his audience, both sides of the aisle ". . . that in conducting these roundups the only expense to the taxpayer is the building of temporary corrals for holding the horses."

Before he could sit down, Jack Murry, the prison guard from Carson City, was on his feet. He turned directly to the Bureau man. "But in this case," he said, quietly setting a trap, "the taxpayer will not even need to build a corral?"

The Bureau man nodded smugly, unaware of the snare. "You're absolutely right, Mr. Murry. The mustangs won't need to be held; they'll be taken care of at once."

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Something in the prison guard's manner electrified us all. I could almost smell the sparks of fire. By his very presence he still held the floor, still kept the Bureau man standing. His questions crackled. "Aha! Saving our money are you?"

The Bureau man looked startled, and Lucius Beebe let out a "Harrrumph."

Mr. Murry snapped his next question. "Don't you know what Clark and Burger are really after?"

The audience leaned forward to catch every syllable.

"Do you think these men give a hoot for the grazing lands? No! They want those mustangs just to grind their flesh and bones into pet food."

I could hear the tense shuffling of boots all over the room. My heart skipped. What was coming next?

The biting voice went on. "This very day I learned that Clark and Burger are the ones who own the rendering plant."

The audience gasped, then began muttering neighbor-to-neighbor, louder and louder.

The chairman pounded for quiet. Then he too went at the Bureau man. "Let's go back to your three hundred horses; how did you arrive at this figure?"

The man no longer had a halo; his hair was wilted dark with perspiration. He blotted it with a handkerchief. "Wh—— why," he stuttered, "our men flew over in a plane and made their count. When they saw one, they counted three."

"How's that?"

"Well . . . ll, whenever there's one, we figure two are hiding."

"Where," an irate voice boomed out, "would they hide? Our mountains are bare! Our lakes are dry! Our flatlands are treeless!"

Now he arched his tall frame over the aisle until he was face to face with the perspiring Bureau man. "By the beard o' Tex Gladding—for that's my name—I'm here to fight this mustang slaughter."

He began fumbling in his pockets. No one interrupted him. At last he pulled out a long piece of paper. "What's more," he said, unfolding it like a road map, "I have one hundred and forty-seven signatures right here protesting this permit. Every last one of them wonders how come those two sheepmen can fence in the hull dang world for their own selves?"

The "agins" cheered loudly.

The Bureau man had a coughing spasm. "All right, all right," he agreed when the room quieted. "Suppose it is only a hundred this year. Next year it'll be two hundred. The next, four hundred, and so on. You see, Mr. Chairman, it's a matter of simple arithmetic."

This was more than the horsemen in the crowd could stomach. Their laughter rocked the courtroom, Charley's heartiest of all. He jumped up and waved to the whole room. "I'd bet my ranch against a silver dollar that every man here would go into the horse business if he could count on an increase like that."

The Bureau man ignored the interruption. "As I was saying, my job is to save the grazing land by keeping the numbers down. Pursuit by air is the humane way, and . . ."

All this while I had been waiting, waiting with my heart bursting in anger.

"Mr. Chairman!" I cried out. "If there really are too many mustangs, I agree something should be done—in a humane way. But if the pilot only wants to sell horseflesh, he doesn't care how the animal suffers. We should never allow such cruelty against living, breathing creatures that hurt and pain just like you and me!"

The Bureau man gaped around at me in open-mouthed amazement.

I pretended not to notice and went right on. "One day I followed a truckload of wild horses to the rendering plant. You should have seen them. They were torn and bleeding and only half alive. I have pictures here to prove it." And I passed my snapshots around.

"I know what she means." It was Attorney Richards, who had remained quiet until now. He glanced at the pictures and passed them on. "I've seen those planes as they flush the horses out of the hills. The pilots shoot at them to panic them out into the open. By the time the animals are caught, every last one is crippled; almost dead. It's the cruelest thing imaginable."

Now big Josh Tabor, with a gold watch chain spanning his barrel of a body, stood up. He was a wealthy cowman. He swiveled around in my direction and pointed his cigar at me. "That sentimental sister doesn't understand what a mustang really is, and I propose to tell her. He's a runty, moth-eaten, mangy scrub of no value anywhere—*outside of a can of horsemeat!* He's a curse to the stockman, a nuisance to the hunter, and a pain in the neck to the Bureau of Land Management. Getting rid of him"—here he eyed me with a foxlike grin—"can be likened to a war on cockroaches in the kitchen or moths in the closet."

Clark howled, "Yeah! Yeah! She oughta have a whole herd running in her backyard! Then see how she likes 'em!"

Before I could answer, the man attacked me again. His tone was razor-edged. "And just what do you propose to do, young lady, when they become that numerous?"

"I propose . . ." I tried to keep my voice steady ". . . IF that day should come, that they be mercifully *thinned* out, not wiped out."

A ripple of applause on our side of the room.

There was a stir at the doorway behind us and a cowhand strode right up to the railing. He took off his hat and slapped it against his thigh, raising a little cloud of dust. He didn't wait for recognition; he just spoke out.

"I'm dog tired. Been de-horning and brandin' since sunup, but I knew I couldn't sleep if I didn't come to put in a word for the mustangs. They're important. They're part of the West. If we kill 'em off like these men are figgerin' to do, we kill the very critter that helped build America. The same America that gives us the right to speak here—arguing whether *they*, them mustangs, should live or die. Don't that take the cake! And we call ourselves human."

He turned and stomped out of the room, a round of cheers trailing his proud and dusty dignity.

The meeting could have ended right then, but everyone sat hushed, waiting for the other fellow to finish it off.

Charley stood up. "Mr. Chairman," he said, "the supervisor of the Bureau has said that seventy-five thousand mustangs have been killed since he has been here. I propose that we save the few tough little fighters that are left. Let's respect their right to live as symbols of the old West and the freedom it stood for."

As Charley took his seat, the commissioners and the district attorney huddled together, conferring behind their hands while the audience carried on the fight in stage whispers. Up in front, Lucius Beebe sharpened his pencil with a slim gold pocketknife, waiting for the verdict.

At last the chairman rapped for quiet. His boylike face wore its customary grin as he scanned the audience, person to person. "The Board denies this permit," he said. "The meeting is adjourned."

Wide-brimmed hats soared to the ceiling. Boots stamped. Spurs jingled.

We had won!

—*Marguerite Henry*

From M. Henry, 1976, Mountains Are for Climbing, Ginn Reading Program (pp. 76-96). Lexington, MA: Ginn & Company. Copyright 1966 by M. Henry, Rand McNally. Reprinted by permission.

APPENDIX C

IDEA UNITS

Something Fishy

WRITTEN FREE RECALL IDEA UNITS

Main Characters: Laura, Alicia Stevens, Sammi, Tony

Setting: Florida mobile home park

Problem: Need $20 to buy a bicycle within 2 days.

Goal: Earn $20 by painting her mom's mobile home, so she can get the bike.

Event 1: Laura agrees to paint the mobile home for $20 by tomorrow.

Event 2: Laura tries to convince Sammi to help her paint. Sammi plans to fish.

Event 3: Laura tries to convince Tony to help her paint. Laura plans to fish.

Event 4: Laura suggests a plan where they paint and fish at the same time.

Event 5: Laura suggests that Tony and Sammi can use her bike when she gets it.

Event 6: The girls paint the mobile home and catch fish at the same time.

Resolution: Laura earns the $20 to buy the bicycle.

Never Trust a Goat

WRITTEN FREE RECALL IDEA UNITS

Main Characters: Juanita and Maria

Setting: Zoo

Problem: A goat bites Juanita's collar and will not let go.

Goal: To find someone who can make the goat let go of her collar.

Event 1: Juanita and Maria make several attempts to make the goat let go of her collar.

Event 2: After no success, Maria goes for help.

Event 3: A crowd gathers to see what is happening. No one gives help.

Event 4: Maria returns with a maintenance man. He leaves without helping.

Event 5: Maria leaves again, this time to get the fire department.

Event 6: A second crowd gathers to watch Juanita and the goat. They leave without giving help.

Resolution: Juanita and the goat are left hanging on to the fence as it begins to rain. The goat will not let go of her collar.

Nana Miriam

WRITTEN FREE RECALL IDEA UNITS

Main Characters: Fara Maka, Nana Miriam, hippopotamus

Setting: Along the River Niger

Problem: A hippo monster eats all the crops, causing famine to hte Songai people.

Goal: Kill the hippo so they can grow food to eat.

Event 1: Hunters try to tackle the hippo.

Event 2: Fara Maka throws lances (wooden spears) at the hippo.

Event 3: Fara Maka asks Kara-Digi-Mao-Fosi-Fasi and his 120 dogs to kill the hippo.

Event 4: Fara Maka feels like giving up. Nana Miriam says that she will help.

Event 5: Nana Miriam puts out the fire and breaks the iron wall around the hippo.

Resolution: Nana Miriam throws the hippopotamus across the river, where it dies. No one starves anymore.

Atalanta and the Race

WRITTEN FREE RECALL IDEA UNITS

Main Characters: Atalanta, Young John, King

Setting: Once upon a time, not long ago

Problem: The King wants to marry Atalanta off, but she does not want to yet.

Goal: Have a race where the winner can marry Atalanta.

Event 1: Atalanta enters to run in the race also.

Event 2: Atalanta prepares by running in the morning.

Event 3: Young John enters the race because he wants to become her friend.

Event 4: In the race Atalanta and three young men pull ahead early.

Event 5: Young John and Atalanta cross the finish line together.

Event 6: The King offers Young John the right to marry Atalanta. He only wants to talk with her.

Resolution: Young John and Atalanta spend the afternoon talking.

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ABSTRACT

MACROSTRUCTURE PROCESSING: HOW DIRECT
STORY GRAMMAR INSTRUCTION
AFFECTS COMPREHENSION

This study measured the effects that direct instruction in narrative text structure using a story map (called "macrostruction") had on the comprehension of average and above average sixth-grade readers. A 2 x 2 x 2 repeated measures design was used with time, text, and treatment as the independent variables. The number of story grammar idea units recalled served as the dependent variable for free- and prompted-recall, with a 4-point rating scale used to categorize the type and frequency of responses given to short answer interpretive and applicative questions. Twenty-one subjects received a 4-week treatment in identifying and using the underlying structure of a text for improving reading comprehension, while a control group continued with routine classroom instruction. Contrary to similar studies conducted, the instructional treatment did have a significant effect upon the number of idea units recalled and the type of comprehension of better readers. Hypotheses concerning the amount and type of comprehension affected were supported. Possible

explanations for these results are discussed and implications for teachers and researchers stated.

Douglas Keith Hartman
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